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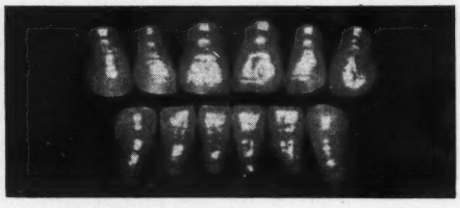

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THE DENTAL Digest

VOL. 48 NO. 11

NOVEMBER 1942

Digests of Applied Acrylic Techniques, *William T. Sayre-Smith, D.D.S.* 508
Child with Twenty-Eight Permanent Teeth, *H. A. Grossman, D.D.S.* 510
Cavity Preparation for Deciduous Teeth, *Bernard Z. Rabinowitch, D.D.S.* 512
Topical Use of Sulfanilamide and Sulfathiazole in Postoperative Wounds, Extractions, Fractures, *Newman D. Winkler, D.D.S.* 517
Self-Administered Ethyl Chloride Analgesia, *S. A. Forman, A.B., D.D.S.* 517
Essential Features of Rheumatoid Arthritis and Osteoarthritis (An Abstract) 520
The Repair of Broken Porcelain Pontics with Acrylic Resin, *Milton Tuerk, D.D.S.* 522
Cast Gold Crown with an Acrylic Labial Veneer, *Leon M. Gecker, D.D.S.* 524
Removal of Porcelain Jacket Crown (An Abstract) 525
The Patient's Headlight, *Jerome J. Pavliger, D.D.S.* 526
Pulp Capping (An Abstract) 527
Evaluation of Sulfonamide Therapy in Dentistry (An Abstract) 545
Ammoniacal Silver Nitrate in the Treatment of Caries in Deciduous Teeth 548
The Editor's Page . . . . 521 Contra-Angles . . . . 532 Dental Meeting Dates 544

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JEROME J. PAVLIGER has his D.D.S. from the University of Nebraska (1932). The patient-headlight described should be helpful in solving the constant problem of lighting.

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Digests of Applied Acrylic Techniques

WILLIAM T. SAYRE-SMITH, D.D.S., Los Angeles

Direct Acrylic Inlay Technique

1. Take a wax pattern with white wax having no pigment. The preparation should be similar to the preparation for a porcelain inlay. There should be no long knife-edge bevels. Too extensive inlays, such as MOD's, should not be attempted when retention is questionable. The gold inlay should be used with an acrylic onlay to hide the gold in these cases. To obviate cementation difficulty from a too perfect acrylic fit, use several coats of cavity varnish before taking the wax pattern. (Refinish the margins.) Remove the varnish with chloroform before cementation.

2. Sprue with a contra-angle bur. Place on a special crater former.

3. Clean the pattern with green soap, and dry.

4. Carefully paint the pattern with an investment of one-eighth fine Monterey or other fine washed sand (obtainable at any paint or building materials company) and a good low-expansion stone. Use a mechanical spatulator.

5. After the investment has set, remove the crater former with a horn mallet.

6. Clean the casting chamber with hot water and chloroform.

7. Boil in distilled water. Remove the sprue. Allow to boil for fifteen minutes.

8. Clean the mold with alternate chloroform (or carbon tetrachloride) and hot distilled water. Blow out the excess water.

9. Fill the mold with separating fluid which may be obtained from a manufacturer or use a pure coconut oil soap. Do not use an egg seal type as it piles up unevenly in the mold. Let set for fifteen minutes.

10. Blow out excess separator. Mix pure acrylic powder with excess monomer liquid in heated dappen dish or cold cream jar. Stir and heat over a low flame until tacky.

11. Fill the casting chamber with an acrylic mix and slowly close until the springs are compressed (2000 pounds' pressure per square inch).

12. Place in cold water and slowly bring to a boil. Boil from one and one-half to two hours for best results. (Covered pressure cooker type container saves water and watching.)

13. Cool slowly (overnight or in running water); open screw press; tap out tapered investment. Break investment up in a towel with the horn mallet.

14. Place the button and casting in strong sodium citrate solution overnight. Then carefully brush and pick off remaining investment.

15. Do little and conservative finishing outside the mouth. Make a cement lock or undercut as for a porcelain inlay around the floor of the inlay and cavity. Cement with light yellow kryptex; or, crown-and-bridge cement may be used to modify colors in the anterior part of the mouth. Finish margins roughly with stones, and discs lubricated with cocobutter.

16. Polish in the mouth at a subsequent appointment with pumice, chalk, and tin oxide. Finish with a felt rag wheel for a high shine.

Direct Acrylic Jacket Technique

1. Take a white wax pattern:

(a) in oversized contoured celluloid tooth form;

(b) with labial facing ground from selected stock acrylic tooth, of which

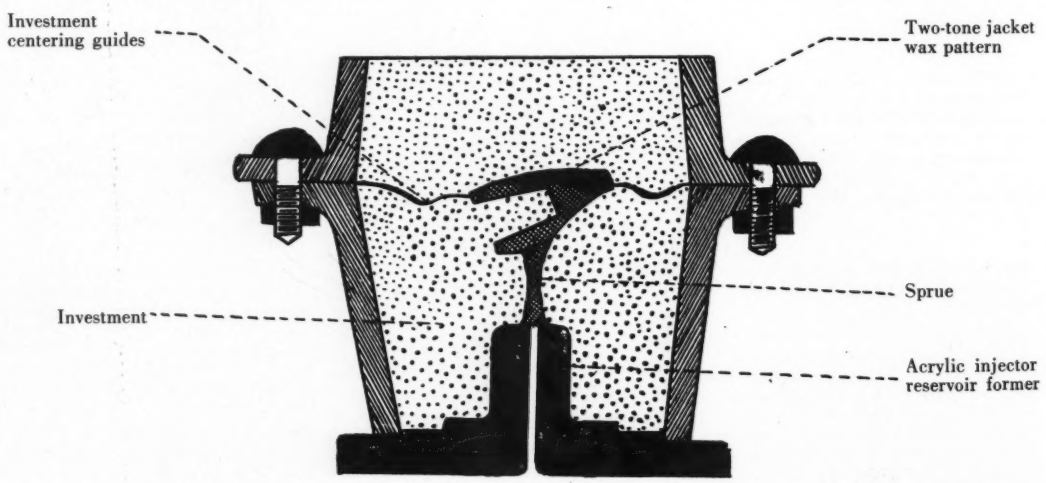


Fig. 1—Two-tone flask. Inlays, jackets, bridges, immediate tooth reproductions are first trial-packed in various shades, with the use of cellophane. (Sprue hole is plugged with match stick.) Acrylic flash is then trimmed off and reservoir of dentine color is injected under jacket-screw; maximum density is assured by compensating spring pressure.

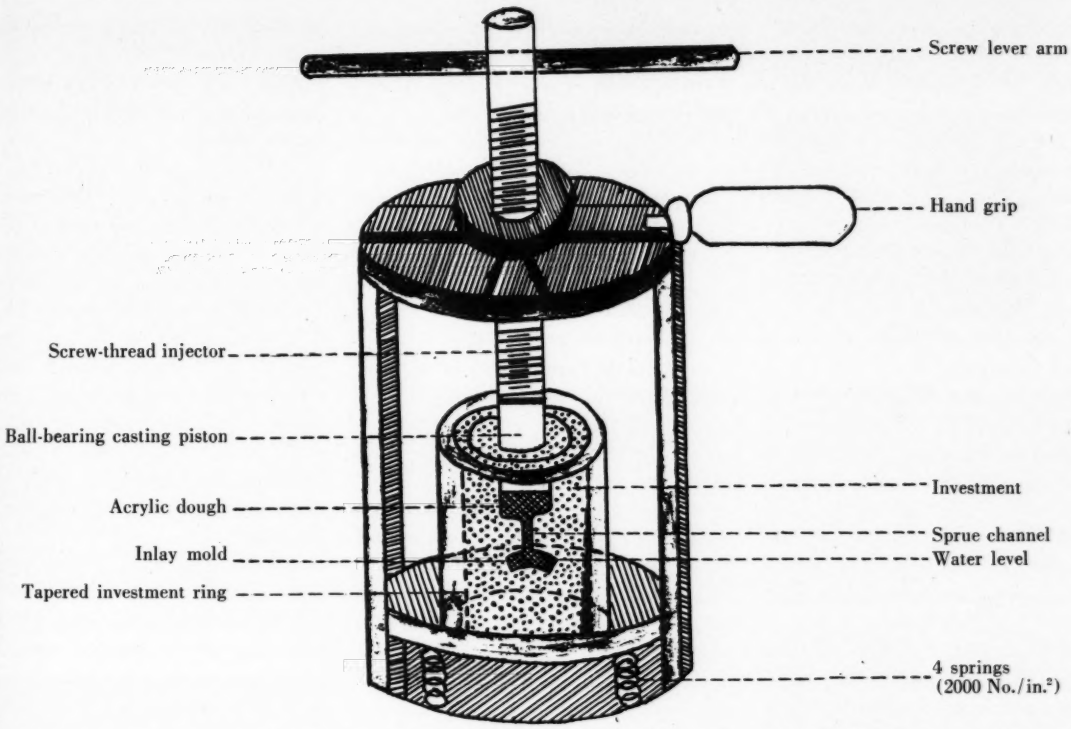


Fig. 2—Acrylic injection casting machine. Water level during curing must be kept below sprue so that inlay shrinkage can be compensated for with less cured—more fluid—acrylic casting button. Electric fan directed on casting machine keeps metal parts above water cooler and acrylic reservoir thus cures slower than inlay.

there are several manufacturers. Place the facing in the labial of a lubricated oversized tooth form; supply the lingual with a soft white wax and position on the prepared tooth.

2. Burnish margins with an excess for finishing down; sprue on lingual with contra-angle bur. Vibrate low-expansion stone in the pattern (or use one-eighth washed fine sand mixed with low-expansion stone) and position a wood screw for a handle. (This handle, after the jacket is cured, will unscrew to break out the die.) Add contact points in wax.

3. If a ground facing from a stock acrylic tooth is used, the celluloid tooth form must be removed before investing. After the sprued pattern is invested in the lower half of the flask, uncover the labial, use a separating medium, and pour the upper half.

4. Heat to boiling; separate and remove the tooth form. Wash out the wax with hot distilled water. Use a coconut oil soap separating medium in both halves of the flask.

5. Trial-pack with "tacky" layered acrylic dentine and enamel. (Excess monomer fluid is stirred into pure acrylic powder over a low flame.) Place a match stick in the sprue hole. Boil for two minutes. Open the flask; characterize with stains, gold casting, or any other restoration to give a desired effect.

6. Cut off flash; close the flask; remove the match stick, and cast body dentine color under spring pressure of 2000 pounds per square inch.

7. Place in cold water and slowly bring to a boil. Boil from one and one-half to two hours for best results.

8. Cool overnight or under running water.

9. Knock apart tapered flask and break the jacket loose from the investment by holding in a towel and using a horn mallet.

10. Unscrew the wood screw to break up the investment inside the jacket. Soak in strong sodium citrate solution overnight. Brush up with green soap, and pick the jacket clean of investment.

11. Roughly finish, staying away from margins and contact points.

12. Carry the jacket to the mouth; finish margins and contact points. Establish desired anatomy. Polish with a burlew disc, pumice, chalk, and tin oxide. High-shine with a felt or rag wheel.

13. Roughen the inside of the jacket for added cement lock. Cement with light yellow kryptex or crown-and-bridge cement if color modification is required. Frequently better strength and retention can be obtained by building an acrylic jacket over a gold (or even silver) thimble. In this way a gold finish line can be obtained on the lingual, and also on the labial if carried beneath the gum tissue for esthetics.

Acrylic Bridge Technique

1. Prepare, cast, and fit abutments as desired:

Hard gold full crowns, half crowns, three-quarter crowns (inlays are less desirable). These may be open-windowed or countersunk for acrylic onlays to conceal gold:

(a) Conservative veneer type castings which lock around the tooth at the expense of enamel and do not penetrate deeply into dentine are preferred; or,

(b) jacket preparations, thimble castings being used with finish line.

2. (a) Wax, cast and solder connective truss member, or use any manufacturer's heaviest acrylic channel gold connector; or

(b) cast and solder gold occlusal for pontics (undercut and sprue from the tissue side). There must be no question of rigidity in the finished bridge.

3. Return to the mouth, and

(a) wax in pontics with white wax having no pigment; or

(b) wax in acrylic teeth or facings prepared therefrom; or

(c) wax in pin or tube teeth selected for shape.

4. Adjust articulation; select shades.

5. Remove the bridge, sprue from the lingual; (use a multiple sprue if required). Paint paraffin on the porcelain denture teeth. Invest in the lower half of the flask (one-eighth fine washed Monterey sand with low-expansion stone). Uncover the labial of the pontics and open-windowed castings.

6. Use a separating medium and pour the upper half. Boil; separate the flask and wash out wax with hot distilled water.

(a) Discard porcelain denture teeth. Put a match stick in the sprue hole.

(b) Trial-pack with "tacky" acrylic dentine and enamel. (Excess monomer is stirred into the powder over a low flame.) Only dentine is required when stock ground-down acrylic tooth facings are used. Pink acrylic is useful when excessive ridge destruction is present.

7. Cure for two minutes in boiling water. Open the flask. Characterize by

(a) cutting knife line, adding stains, and putting on a drop of monomer;

(b) placing silicates with lighter more opaque acrylic material, and add a drop of monomer.

(c) putting in gold castings, if further characterizing is desired.

8. Trial-pack again. Cut off flash, close the flask. Remove the match stick and cast remaining dentine mix through the sprue hole under 2000 pounds' pressure per square inch.

9. Place in cold water and bring slowly to a boil. Boil from one and one-half to two hours for best results.

10. Cool the case slowly overnight or under running water.

11. Open the flask; knock out tapered investment; and break up in a towel with a horn mallet.

12. Soak in strong sodium citrate solution overnight and brush and pick off remaining investment.

13. Polish roughly with stones and burlew discs. Take to the mouth to correct anatomy. Do not use saddle type contact of pontic with ridge. Use minimum contact, thus permitting stimulation and self-cleansing actions.

14. Polish with pumice, chalk, tin oxide; high-shine is obtained with a felt or rag wheel.

15. Cement to place.

Perfect Reproduction Immediate Denture Technique

1. Take a hydrocolloid impression of remaining teeth.

2. Pour in soluble plaster.

3. Separate and cut down the cast to include only teeth and interproximal gum tissue.

4. Sprue with large or multiple sprues from lingual, and invest soluble plaster teeth in lower half of flask. Uncover labial of teeth; use separating medium and pour upper half.

5. Boil out soluble plaster teeth; open flask. Apply separating medium to both halves of flask.

6. Place a match stick in the sprue hole, and place "tacky" selected shades of acrylic dentine and enamel to trial-pack. (Heat and stir powder with excess monomer liquid over a low flame. Trial-pack and boil for two minutes.)

7. Open flask and add characterizations; i. e. opaque silicates, hair-line stains, gold castings—either from a chart or with the patient present. Add pink, interproximal tissue acrylic material, or grind out of finished acrylic teeth and wax with full denture gum material.

8. Trial-pack again; cut off flash and close flask.

9. Remove the match stick and inject remaining acrylic dentine under 2000 pounds' pressure per square inch.

10. Bring slowly to a boil. Boil from one and one-half to two hours. Cool overnight or under running water.

11. Polish teeth; cut out interproximal gum tissue (unless packed in pink acrylic material).

12. Return to articulated models; cut off cast teeth now duplicated.

13. Wax duplicated teeth (positioned in labial impression) with selected stock acrylic teeth to replace missing posteriors.

14. Balance the case; finish the denture; return to the articulator for milling-in teeth.

15. Place in mouth; correct fit and balance as required.

2943½ *Kenwood Avenue.*

Child with Twenty-Eight Permanent Teeth

H. A. GROSSMAN, D.D.S., Chicago

Report of Case

A girl, aged 8 years, presented with twenty-six permanent teeth in position and two in the process of erupting.

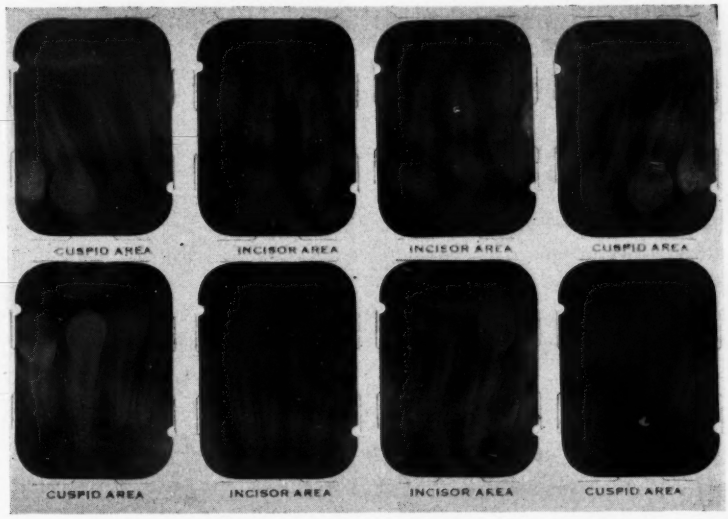
History—The child, born under normal circumstances, weighed 5½ pounds at birth. She was bottle-fed. Measles and whooping cough have been the only childhood sicknesses thus far. The last deciduous tooth was shed at the age of 7. The child was alert in her school work and bright in conversation.

Physical Examination—The statement of the physician, Samuel Perlow, follows: The patient, aged 8 years, weighs 94 pounds and is 4 feet 5½ inches tall and of stocky build (Fig. 1).

The pulse was regular with a count of 84; the temperature was normal. The head is of normal size and shape; the eyes and ears are normal. There was no adenopathy or thyroid enlargement, nor enlargement of the liver, spleen or kidneys. Heart and lungs, abdomen, ex-

Fig. 1—Patient, aged 8, who has all permanent teeth with the exception of the third molars.

Fig. 2—Model of child's permanent teeth.



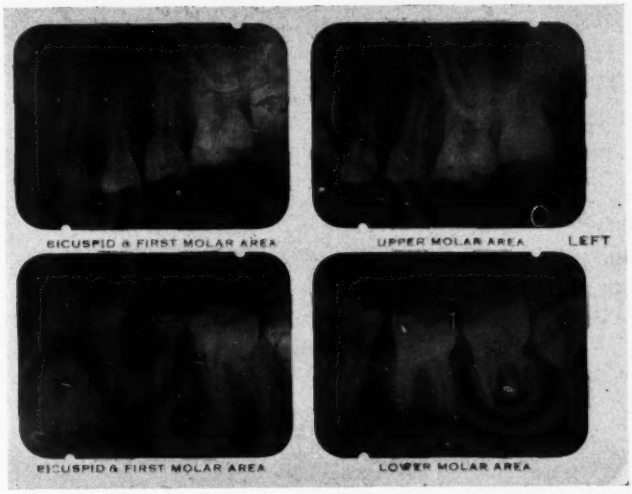


Fig. 3—Full mouth roentgenograms of child's permanent dentition.

ternal genitals, and extremities were all normal at the time of examination. Fluoroscopic examination of the chest revealed nothing abnormal, no enlargement of the thymus. Urinalysis was normal.

The patient's mentality is somewhat above average.

Oral Clinical and Roentgenologic Examination—Twenty-four permanent teeth were in position (Figs. 2 and 3). All the lower teeth except the third molars had erupted. The upper teeth, up to the second molars, were in place and the second molars were in the process of erupting, so that with the exception of the third molars, the patient may be said to have a full complement of permanent teeth. That these were not deciduous teeth was substantiated by roentgenologic examination.

No caries was found clinically or roentgenologically, and oral hygiene was unusually good.

Comment

Close interrogation of the parents of the patient and careful consultation with the physician failed to reveal any pathologic or abnormal condition in the child. There was nothing unusual except the premature shedding of the deciduous teeth and the eruption of the permanent teeth.

3635 *Roosevelt Road.*

Cavity Preparation for Deciduous Teeth

BERNARD Z. RABINOWITCH, D.D.S., Los Angeles

DIGEST

The anatomy and morphology of the deciduous teeth necessitate a variation in the operative procedures from the permanent dentition. The general differences are outlined and the specific variations are noted with reference to (1) the centrals and laterals; (2) the anterior pulp cavities; (3) deciduous anteriors; (4) first deciduous molars; (5) second deciduous molars.

The fundamentals of cavity preparation in the deciduous tooth are discussed with emphasis on the principles that caries determines the outline form and that a dry operative field is essential. Class I, class II, class III, class IV, and class V preparations are discussed.

Incipient and extensive caries receive separate consideration, with comments on the matrix and restorative materials.

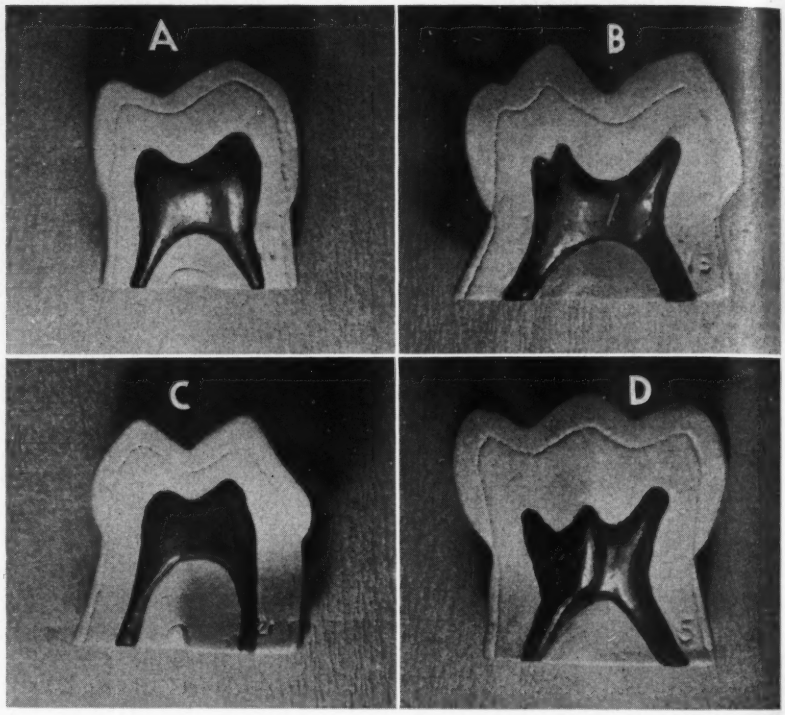


Fig. 1—Note comparison in thickness of enamel and dentine and the size of the pulp: A, upper first molar; B, upper second molar; C, lower first molar; D, lower second molar.

Anatomy and Morphology

THE ANATOMY and morphology of the deciduous teeth necessitate a variation in the operative procedures from the permanent dentition. In general, the deciduous teeth vary from the permanent (Fig. 1) in the following ways: (1) They are smaller; (2) there is a marked constriction at the cervix; (3) there are pronounced cervical ridges on the axial surfaces of the crowns; (4) the occlusal surfaces of the molars are relatively smaller in relation to the crown, and the height of contour is near the gingival third on most surfaces; (5) the enamel is lighter in color and neither the enamel nor the dentine are as dense as in the permanent teeth; (6) the pulp is comparatively larger than in the permanent teeth, and the pulpal horns extend higher into the cusps; (7) the mesio-buccal horn is most frequently exposed.

There are further differences:

Deciduous Centrals and Laterals—The deciduous centrals and laterals are smaller than their permanent successors, and are not so angular in contour—all the surfaces and borders being somewhat rounded. There is a marked constriction of the crown near the cervical line which is the result of a thickening of the dentine rather than an increase in thickness of the enamel. The cuspids are bulbous in appearance and present the characteristic cervical construction.

Anterior Pulp Cavities—The pulp cavities in the anterior teeth are not so large as in the posterior teeth, which is accounted for by the greater amount of dentine, nor are the pulp horns so pronounced.

Deciduous Anteriors—The deciduous anteriors, including the upper and lower centrals, laterals and cuspids, are about one-third smaller than the permanent anteriors mesio-distally as well as inciso-gingivally. It is for this reason that the arches must grow and expand laterally in the anterior region from the fourth to the seventh year, to allow for the normal eruption and correct positioning of the permanent anteriors. Unless this expansion takes place, irregularities are sure to result.

First Deciduous Molars—The first deciduous molars, the forerunners of the permanent first bicuspids, have little in common anatomically with the

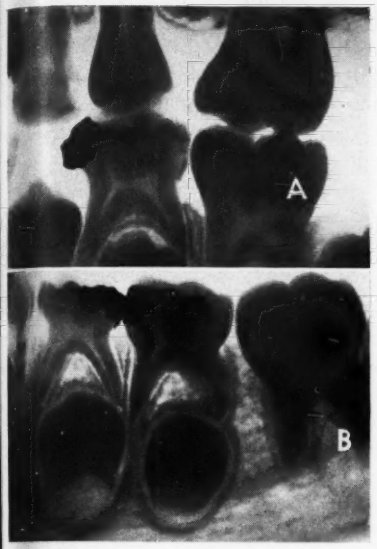


Fig. 2—A, Routine roentgenogram showing an overhanging margin on the second deciduous molar which would hold the erupting bicuspid. B, Routine check-up of teeth of child. Note finished margins of second molar restored first. There is an overhang on distal of first molar but note contour.

exception of the width they occupy. The lower first deciduous molar is wider mesio-distally through the coronal area than its successor and possesses two roots. The upper first deciduous molar looks more like a bicuspid; however, the buccal is too wide in comparison with the lingual to resemble its permanent successor. The upper first deciduous molar is like a permanent molar in that it has three roots.

Second Deciduous Molars—The second deciduous molars are larger than the adjacent first deciduous molars but smaller than the first permanent molars posterior to them, although they resemble the permanent teeth except for size and the decided constriction at the gingival. There is a larger bulk at the gingival third of the deciduous second molars and again these are larger than the second bicuspids. Although the second deciduous molars are often mistaken for permanent molars, one can usually ascertain the status of the tooth by the position in the arch, the age of the patient, anatomy of the tooth, and by a roentgenogram.

In all these deciduous molars the roots are spread wider than the coronal area of the respective teeth.

Fundamentals of Cavity Preparation

The average distance from the external portion of the tooth to the pulp, mesio-distally, will vary from 1.5 mm. to 2 mm. in the first deciduous molars and from 2 mm. to 2.5 mm. in the second molars. In short, the deciduous teeth have more brittle enamel and softer dentine and are therefore less resistant to the bur than the permanent teeth. The pulp chamber is larger, giving a proportionately smaller area of hard tissue in which to shape the cavity. One of the greatest differences is the bell-shaped crown with the sharply constricted neck of the deciduous molars when compared with the permanent molars.

Caries Determines Outline Form—There are certain fundamentals one must keep in mind in the cavity preparation of deciduous teeth. First and foremost of these fundamentals is the fact that caries determines the outline form.

Retention form may be difficult to obtain, and the classic shape or outline

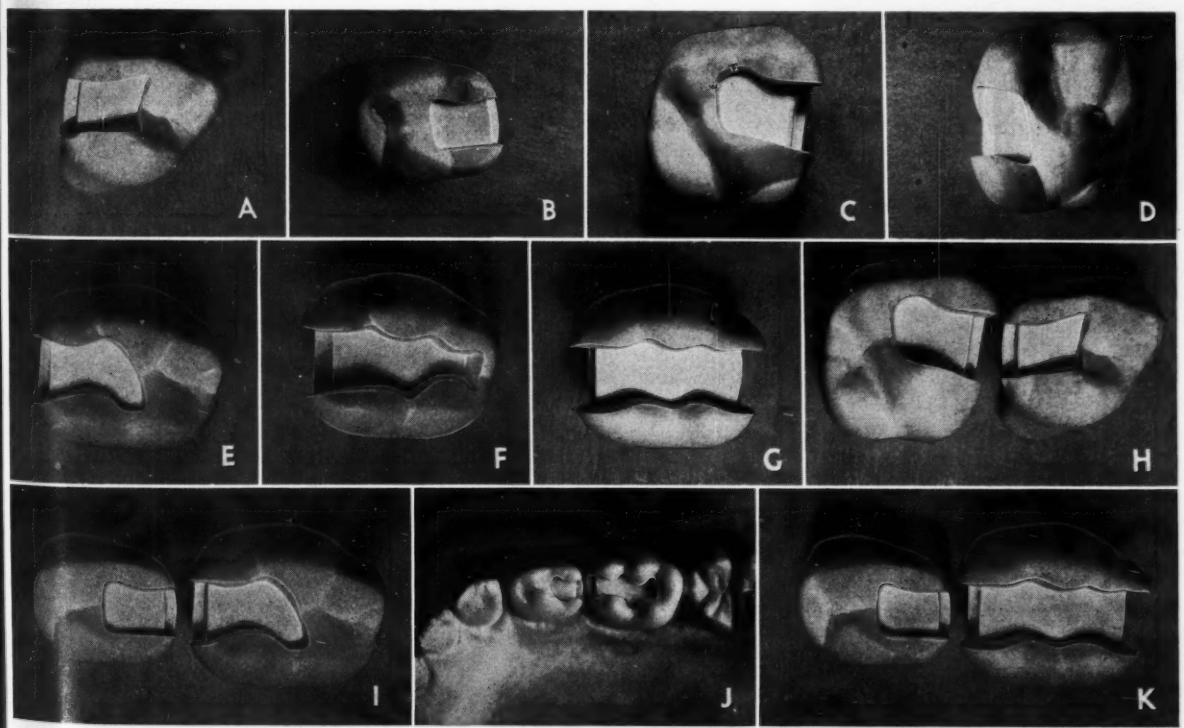


Fig. 3—Class II preparations. A, Upper first molar; B, lower first molar; C, upper second molar, mesial cavity; D, upper second molar, distal cavity; E, lower second molar, normal extension; F, lower second molar, extensive preparation because of extreme pitting or extensive caries; G, lower molar, MOD preparation; H, upper approximating cavities; J, K, lower approximating cavities. Note the wide isthmus on all preparations and the box form of the proximal portion.

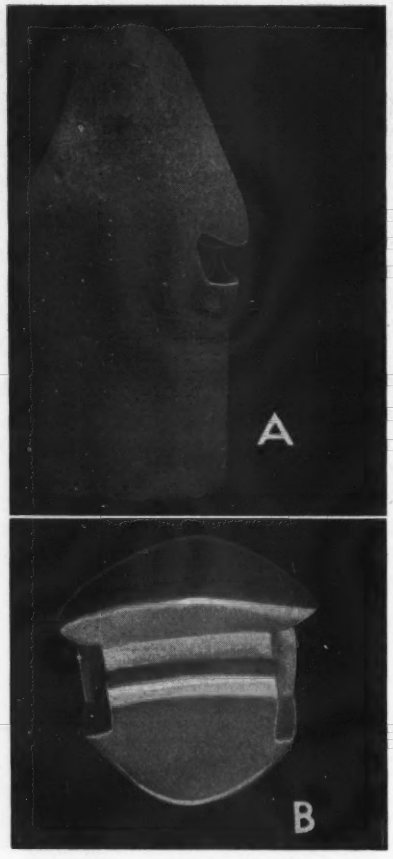


Fig. 4—Class IV preparations. A, Angle disced off, polished, and treated with Howe's ammoniacal silver nitrate; B, mesio-incisal-distal preparation for a casting.

form may have to be overlooked in teeth having extensive caries. All caries should be removed, although in some cases, stain, which may be infected, is allowed to remain but it is well sterilized through the application of Howe's ammoniacal silver nitrate solution.

Operative procedures vary with the operator, age and physical condition of the child, and extent of the carious lesion. The sensation of pain is often lacking and may be replaced by a tickling sensation which was explained by the late John A. Marshall of the University of California: The deciduous tooth has greater nutrition, as its apical foramina are completely formed for just a short period of time—from the completion of calcification to the beginning of resorption, an average period of about two years. During the remainder of the time the action of the odontoblasts and the osteoclasts allows free passage of the blood to and from the pulp.

Dry Operative Field—Time can be saved, the patient kept under better control, and progress of the preparation observed if the operative field can be kept dry. A dry area is essential during the placement of the restoration. There are a number of ways this can be accomplished:

The best of these is the application of the rubber dam when possible. This procedure is different in the mouths of children with deciduous or transitional dentition than it is in the adult when it is applied over a larger area to allow for a larger field of operation and a better view of that field. In the child patient we cannot have this convenience in operation as child mouths are smaller and less easily stretched, and spaces between the teeth during the growth and developmental period make isolation of a dry field over an extensive area difficult.

In a simple occlusal cavity, therefore, the clamp is placed upon the tooth being treated. In a mesio-occlusal cavity the dam is moved forward one tooth. If the distal of a tooth is being treated, place the clamp on the tooth distal to the one being restored and include in the field of operation only that tooth and the tooth that is clamped. If a mesio-occlusal-distal cavity is being prepared, place the clamp on the tooth distally and extend the dam to include in the field of operation the tooth anterior to the one being treated.

The clamps to be used on deciduous dentition are the universal molar clamp, number 26, to be placed on the second deciduous molars, and the universal bicuspid clamp, number 27, for the first deciduous molars. Because the deciduous teeth are bell-shaped, they will allow the clamp to slip down to the cervix and cause pain unless the clamp is slowly and carefully eased into position. Another reason that the rubber dam cannot include in its field of operation the anterior teeth is because of the spacing during growth and development. This would not allow the dam to become wedged under the contacts of adjacent teeth in that area and thereby seal off the field of operation from saliva.

When working on the mandibular teeth, a hole should be made with the rubber dam punch in an area approximating the cuspid on the other side of the arch about 5 mm. lingually. This is for the placement of the saliva ejector which will hold it away from the tissues and not cause discomfort.

In younger and frightened children it is inadvisable to add to their fears, and therefore, cotton rolls should be used.

General Considerations of Procedure—I believe that a judicious combination of the use of hand instruments that are sharp, new sharp burs, and smooth stones will result in a cavity prepared with less pain and pressure (between which the child does not often differentiate) and greater speed.

In a general way the steps in cavity preparation as outlined by G. V. Black for permanent teeth are followed. Instead of extension for prevention of recurrence of caries, however, the steps in cavity preparation of the deciduous teeth are controlled by the relationship of the pulp to the form of the tooth. Also, because of the form of the pulp cavity and the thinness of the enamel, the cavity walls in relation to the pulp should follow the planes of the dento-enamel junction.

Class I Preparation

Open a small cavity with a number ½ round bur or a 33½ inverted cone to a depth just beneath the dento-enamel

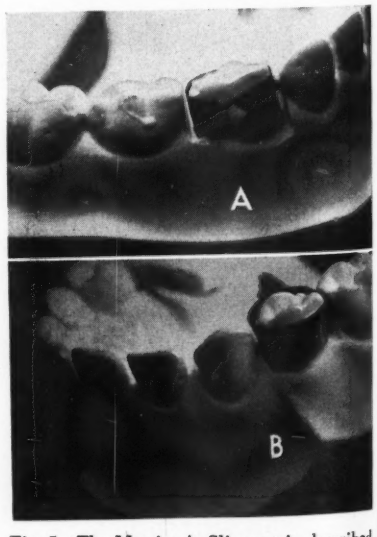


Fig. 5—The Matrix. A, Slip matrix described in the text; B, tinner's joint type matrix. Note wedges are always used.

junction. Follow with a number 35 inverted cone bur to the extent of the caries. Remove any further caries with a spoon excavator 10-6-12. Complete the surface outline with a Wedelstadt number 10 or 15.

In more extensive caries remove overhanging or unsupported enamel with a chisel and then spoon the remaining caries.

Class II Preparation

The operation for a class II preparation has perhaps presented the most difficulty in operative dentistry for children. Too often preparations are seen that are nothing more than holes in which were placed cements, amalgams, or some "new revolutionary filling material."

It is almost impossible to find incipient interproximal caries without roentgenograms, because of the flat contacts and the short occluso-gingival coronal area and the high interproximal gingival tissue. By the time the marginal ridge is broken down by the undermining caries, many pulps are exposed. I therefore recommend that in practice routine bite-wing roentgenograms should be taken at every recall visit.

In restoring the two approximating molars the distal cavity should be treated first as this allows an opportunity for finishing of the approximal surface before placing the restoration in the anterior tooth. This allows a smooth surface against which the erupting bicuspid may glide (Fig. 2).

Incipient Caries

Occlusal Portion—Open onto the occlusal adjacent to the infected area with a number ½ round bur followed by a number 34 inverted cone. With a number 37 inverted cone complete the outline form on the occlusal and carry to the marginal ridge.

Approximal Portion—With a number ½ round bur, sink to the caries, moving bucco-lingually at the dento-enamel junction. With a chisel, number 10 or 15, break out the undermining enamel. With a number 557 fissure bur extend the box form but be careful not to overextend. Complete the outline form and square the box-form with either bin-angled chisels or Wedelstadt chisels on the upper teeth and enamel hatchets on the lower teeth obtaining adequate width at the isthmus (Fig. 3).

In ideal preparations added retention may be obtained through the use of angle formers placing the point at the gingival-axial line angle, moving bucco-lingually, thereby creating a slight undercut.

Bulk of material is obtained by one of two ways, either by depth or width. In the deciduous teeth, because of the size of the pulp, the cavity is extended high on the cusps, giving bulk of material through width.

The most common cause of failure of a class II restoration is the lack of width at the isthmus which may result in fracture of the restoration and subsequent loss or irritation of the proximal portion.

Extensive Caries

Break down the undermined and overhanging enamel with chisels, number 10 or 15, thereby opening into the interproximal area. With the number 37 inverted cone bur open into the occlusal and complete the outline form. With spoons, remove remaining caries, and complete, being careful not to overextend.

In cavities with a wide bucco-lingual proximal extension, added retention may be required to retain the restorative material. As these cavities are usually too deep to allow for the retention obtained by the use of angle formers at the axio-gingival line angle, it may be obtained by accentuating the axio-lingual and axio-buccal line angles through the use of a number 700 tapering fissure bur.

Frequently one will find two adjacent approximal incipient cavities, in which case the mesial cavity may be "spot filled." This can be attempted only when the marginal ridge is not involved or when the cavity does not extend to any appreciable depth into the tooth. After having prepared the distal cavity in the orthodox manner, a small round bur is used to open the cavity. This is followed by a number 33½ inverted cone to acquire the desired retention. This "spot filling" is then done, and a temporary filling is placed in the regular preparation. The restoration is completed at a subsequent visit.

Class III Preparation

If a deciduous anterior is to be in place for six months or more, I prefer to place a so-called permanent restoration, preferably of amalgam. Up to the age of 5 or 5½ years, it is highly desirable to restore the anteriors. It has not been practical to restore these teeth if the incisal angle is involved and there is shallow caries. If that is the case, disc off the areas involved and treat with Howe's ammoniacal silver nitrate solution. If, however, the caries has reached any appreciable depth and the incisal angle is sound, a regular class III restoration with a convenience form on the lingual of the uppers and labial of the lowers will aid in the packing of the restorative material. In cuspids one can even obtain this convenience form on the incisal which is usually worn.

Class IV Preparation

The class IV preparation is the same as the class III, with this variation: the incisal or lingual steps are substituted for the incisal anchorage. The lingual step consists of a small dovetail preparation cut about midway from the incisal to the gingival, similar to the occlusal step in molars. Remove little more than the enamel so as to prevent thermal shock to the pulp (Fig. 4).

Class V Preparation

A number 34 or 35 inverted cone bur is used. To reduce pain, have the bur revolve slowly in a series of short cuts. The walls are trimmed to form with a chisel, either straight or 6½-2½-9.

The Matrix

In the placement of a plastic restoration in a class II cavity a matrix should be used. This may be either of a mechanical variety, such as the Ivory number 8, or a simple type, such as is shown in Fig. 5. This is made up of .002 inch stainless steel. Quantities may be made up in advance by the assistant in various sizes. A hole is placed in one end of the band, and the other end is trimmed so that it will slide into the hole. When placed around the tooth the band may be pinched back tightly. There are

many other types that are quick and easy, such as the full band with the stovepipe or tinner's joint, the full band spot-welded matrix, and the tie-on matrix. All matrixes should have a wedge placed so as not to allow for overhangs. If the rubber dam is used they should be blocked up in the usual manner (Fig. 5).

Restorative Materials

The common restorative materials used in deciduous teeth are copper cements, black and red; copper amalgam; silver amalgam; inlays; silicates. I believe that the copper amalgam is the material of choice in the group of plastic materials. It takes a slightly longer time to set up, but when placed properly will last the life of the tooth. In the handling of copper amalgam it is imperative not to overheat nor to overtriturate. Heating should continue only until the mercury bubbles begin to appear; then triturate three or four times; squeeze out all excess mercury, first between thumb and forefinger, and then in a towel or squeeze cloth. The initial set should take place in from three to five minutes.

Copper amalgam is less of a conductor of thermal shock than the other materials and it seems clinically to be best tolerated by the tooth. Its main disadvantage is the lack of resistance to marginal stress.

The inlay is the restoration of choice when finances need not be considered. Normal contact and a dependable anatomy may be maintained.

Cements should be considered only as a temporary restoration and may be used in teeth that will be in position only a short time, or may be used as a covering in such treatments as pulp capping, root canal fillings, or partial pulpotomy.

Silicates may be used in the anterior teeth and should always have a varnish or lining.

Silver amalgam may be used interchangeably with copper amalgam only in cavities of ideal depth or when a cement base or lining is used, because, for some reason that I do not know, some teeth become devitalized under silver restorations.

5371 *Wilshire Boulevard.*

Topical Use of Sulfanilamide and Sulfathiazole in Postoperative Wounds, Extractions, Fractures

NEWMAN D. WINKLER, D.D.S., New York City

SURGEONS ON the various war fronts today realize the efficacy of the sulfonamide drugs in the treatment of infected wounds. Their success in the employment of sulfanilamide and sulfathiazole has proved almost phenomenal. The dental profession, therefore, may take note and employ these drugs in like manner: in postoperative wounds, following extractions, and in wounds coincidental to fractures. This precaution against infection may be followed routinely.

Procedures

1. The wound should receive complete débridement and saline irrigation.

2. A sulfadiazine tablet, 0.5 Gm. (7.72 grains), or a sulfanilamide tablet should be crushed to convenient size under aseptic conditions, and placed at the base of the wound and tamped into place with sterile cotton or gauze.

3. An iodoform or a plain gauze drain may be employed.

Other forms of the drug may be used as follows:

1. As a powder, the drug may be insufflated into the wound.

2. As a paste, it may be mixed with either hydrogen dioxide or sterile water, applied and tamped into place.

The use of hydrogen dioxide with sulfanilamide increases its bacteriostatic action. It is believed that in this combination hydrogen dioxide is not decomposed, so that it checks the growth of organisms. It is also believed that sulfanilamide and sulfathiazole are not in themselves bactericidal; their effects depend on oxidation products.

3. A 5 per cent ointment may be applied on a gauze drain.

Cautions

The following caution should be observed in the treatment of fractures: It should be noted that the healing of compound fractures is not retarded by locally applied sulfanilamide or sulfathiazole. Good callus is obtainable. In these cases, however, only the pure drug should be applied, not the tablet which contains an excipient. It is also well to note that heating can destroy the sulfonamide drugs.

2488 *Grand Concourse.*

Unsolicited Manuscripts Are Welcome

"When you have made an observation of value or reached a conclusion concerning the unusual, publish it. Avoid carrying unpublished knowledge to the grave!"—Sir William Osler.

Self-Administered Ethyl Chloride Analgesia

S. A. FORMAN, A.B., D.D.S., Cleveland

DIGEST

Methods of pain control available to the general practitioner are briefly discussed preliminary to the description of a new ethyl chloride analgesia device. This apparatus is self-administered and controlled by the patient.

ALTHOUGH THE problems of relieving pain in major surgery have been greatly advanced, it is in the field of minor surgery, in the treatment of the ambulatory case that more investigation must be done.

Methods of Control of Pain

What means does the general practitioner have at his disposal to control pain? He has (1) the local anesthetic; (2) intra-oral medication; (3) the patient-operated nitrous oxide analgesia apparatus; (4) patient controlled ethyl chloride analgesia apparatus.

Local Anesthetic—The most commonly used method of pain control is the local anesthetic. Although it is an ideal way to eliminate pain, the local anesthetic cannot be used routinely in every case nor for all types of patients. Every dentist and physician encounters many instances in which he hesitates to use a local anesthetic because of the presence of infection or of inflammatory processes. Besides the time, trouble, and risk involved, the local anesthetic is painful and annoying to the patient, especially when the tissue is hypersensitive and inflamed. No matter how painless the injection, most patients "dread the needle" and "that swollen, dead feeling." Frequently the operator must also contend with an epinephrine reaction in which patients become jittery or pass into syncope. The local anesthetic, therefore, although it has a definite place in dentistry, cannot be used every time and for every case.

Intra-Oral Medication—An excellent aid for pain relief is intra-oral medication; but in most cases the patients are stupefied for hours, and feel "dopey" the rest of the day. It is dangerous to permit such a patient to leave the office unescorted.

Patient-Operated Nitrous Oxide Analgesia Apparatus—To obtund pain the patient-operated nitrous oxide analgesia apparatus has shown satisfactory results. Physicians have also employed this at hospitals for obstetrical purposes to relieve the pains of labor.

The first analgesia device was introduced in 1905 but few took advantage of its use. Professional men would rather not bother with a complicated mechanism involving dosage controls and valves. The equipment was cumbersome, not portable, and the initial cost and upkeep were prohibitive. The physicians also found it impracticable for out-call purposes.

Patient Controlled Ethyl Chloride Analgesia—Now, for the first time, patient-controlled analgesia, with the use of ethyl chloride, can be brought into the home. The new instrument, being small, simple to operate, compact and portable, is easily slipped into the physician's bag.

With a free supply of air, "open method," disagreeable reactions are eliminated and ethyl chloride is one of the safest anesthetics for short operations. As used in the patient-controlled device for analgesia, I find there is no danger.

Before proceeding further with a description of the device, I must mention the physiologic action of ethyl chloride. As I have stated before and stress again, ethyl chloride with sufficient air, (as used in this instrument) is safe. It is pleasant to take, having a sweetish taste and aromatic odor; therefore, there is no stimulation of salivary glands, or "strangulation."

With this self-administering appara-

Fig. 1—Appearance of instrument as dentist holds it for patient's examination.

tus, which covers the nose alone, the patient at no time feels cut off from air, for the mouth is entirely open and free. There are no asphyxial symptoms exhibited during the administration.

Ethyl chloride is the most rapidly-acting of all anesthetics, being quickly absorbed by the system and eliminated with equal rapidity, ensuring complete, quick recovery. Elimination takes place chiefly from the lungs, and almost entirely so in analgesia, because so little is absorbed by the blood.

In the case of ethyl chloride analgesia, the small quantities, if any at all, of ethyl chloride in the blood stream are eliminated at once and do not pass into the gastric juices. No headaches or other unpleasant after-effects are present; therefore, this is ideal for the ambulatory case, the patient coming in for service who expects to go about his business when his visit is completed.

Analgesia

What is analgesia? It is the initial stage of anesthesia, in which the patient is still conscious, but has relief from pain.

The use of ethyl chloride to produce analgesia is not new. Men in dentistry and in medicine have used and recommended it for years, as an ideal way to eliminate pain in brief operations or procedures. In dentistry, analgesia is useful for: (1) excavating sensitive cavities; (2) lancing abscesses; (3) correcting traumatic occlusion; (4) cutting the gum flap over the third molar; (5) preparing bridge abutments; trying in bridgework; (6) curetting deep pyorrhea pockets; scaling; (7) pulp extirpation; (8) extraction of deciduous or pyorrheal teeth; (9) dressing, flushing dry sockets, and (10) for giving a local anesthetic when the patient objects to a needle or in combination with a local, gives the patient added analgesia for root elevation or extractions. Patient-controlled analgesia may be used for all painful procedures that may be done quickly.

Ethyl chloride analgesia may be obtained by having the assistant hold a piece of gauze under the nostrils of the patient and intermittently spray ethyl chloride on the gauze while the operator completes a painful procedure. In this way analgesia can be extended for some time.

Fig. 2—Instrument in place and ready for use by patient.

The use of the ethyl chloride device eliminates the need for an assistant, for the patient self-administers the analgesic as he desires it. The psychologic effect is tremendous. The patient becomes important; he is part of the operative procedure; he must cooperate. He has in his control the means of minimizing pain, at any time that he feels it necessary. His mind is occupied, his thoughts are not on the treatment. The neurotic and apprehensive patient is anxious to grasp this means of relieving *his* pain and of dispelling *his* fear.

Some men employ ethyl chloride as a refrigerant anesthetic, applying it to a part by spraying. I speak from personal experience when I say that it is a poor way of controlling pain; it is an uncomfortable and shocking procedure for the patient. In fact when spraying ethyl chloride in the mouth for the purpose of freezing, the vapors escaping are inhaled and it is my belief that more benefit is obtained indirectly by inhaling the vapors than by refrigeration, for in this way the patient does become analgesic. It is said that the anesthetic properties of the drug were discovered in this manner.

Description of Analgesia Device

This small, compact device is not "hospital-looking" or patient terrifying and a patient does not associate it with anything of an unpleasant nature.

The instrument is so designed that at no time does the patient inhale the anesthetic alone. Each time the patient inhales, plenty of air is mixed with the ethyl chloride vapors. Each time the pa-

tient squeezes the bulb actuator only a small amount of the anesthetic is deposited for inhalation with air. There is no danger of overdose for when the patient ceases to squeeze the rubber hand bulb, or even if he maintains a constant grip without release, the anesthetic automatically is stopped and the patient breathes natural air alone. The patient is unable to go beyond the analgesia stage for he is unable to squeeze the bulb when he gets into deeper analgesia. Even if he wants to, his hand will not respond; he cannot give the bulb a vigorous squeeze which is necessary to release more of the analgesic fluid.

Procedure for Use of Self-Administering Analgesia Apparatus

Before placing the instrument on the patient, I hold it outstretched in my hand and explain its use and what sensations he should anticipate.

I impress the patient with the fact that he will not go to sleep or lose consciousness; that when he self-administers analgesia he will be in a state in which pain is absent. I do not exaggerate to the patient, for all procedures are not entirely painless, but it will put him in a mood in which he can tolerate pain.

I describe to the patient how he will feel and what to expect in this analgesic stage. From personal experience I am able to speak of a pleasant exhilaration. One feels drowsy, indifferent to pain, slightly intoxicated, a sensation of warmth and well-being, and a sensation of floating through space. The finger-tips and toes tingle and a numbness extends to the hands, arms, lips, mouth, and tongue.

1. The patient is seated comfortably with head and neck in a straight line. In the dental chair the head is supported by a head rest; on any other chair, the head may rest against the back, or the chair may be placed close to the wall, so that the head may have support.

2. The instrument is then placed over the patient's nose, resting on the forehead, and is securely and comfortably held in that position by adjustable head straps.

3. The patient is ready to proceed with analgesia. There are no valves, controls or dosages to set. The device is merely put in place. Indicate to the patient that he should squeeze the hand bulb, with quick, vigorous squeezes, inhaling through the nose at the same time. The rubber bulb is squeezed and allowed to inflate, and manipulated again. The patient does this from five to ten times depending on the person—his age, sex, size, and susceptibility to the anesthetic. I instruct the patient that the first inhalation is like taking a breath of sharp, cold air. He will then know what to expect and will react favorably.

4. The patient inhales and when he feels that he is drowsy and has had enough, he can stop squeezing the bulb actuator, and, if he wishes, he can inhale through the mouth. As the patient manipulates the bulb, I speak to him in a soft voice, telling him that he is cooperating beautifully, that he is doing fine. I suggest to him that when he feels drowsy to cooperate with me, to open his mouth. This presuggestion is similar to a prehypnotic suggestion. Analgesia is somewhat like an amnesia stage.

If this procedure is followed, spasm of masseter muscles, in which the patient clinches his teeth together and will not open his mouth for several seconds, will rarely occur. This is more important for the dentist, naturally, than for the physician whose operations are not localized within the mouth.

5. After the patient has manipulated the bulb several times and feels that he is ready for the procedure, he indicates by word or motion, when questioned. The surprising effect of ethyl chloride analgesia is that although the patient can hear the operator's voice, as is apparent when he cooperates with the requests of the operator, and can even speak in a rational manner, he will tell the operator later that he did not mind what was done at all. Sometimes the patient will moan, cry out, or stiffen. but if asked later whether it hurt, he will say "No."

6. When the patient indicates that he is ready, I wait for a few seconds before proceeding, for the patient will go under just a little deeper. This is because of inhalation of the ethyl chloride vapors from the lower respiratory tract. The operation is then begun.

At any time during the procedure should the patient feel or anticipate pain, he can squeeze the bulb and inhale a few times until he is comfortable once more. As I am working when I anticipate a painful manipulation, I suggest that the patient squeeze the bulb and take a few inhalations, so that his pain and fear will be relieved.

7. In certain cases, when a little additional time for completing the operation is desired, the following method is employed:

The patient is instructed to squeeze the hand bulb until he cannot manipulate the bulb any longer. At this stage the operator takes over, squeezes the rubber bulb a few extra times, carrying the patient into deeper analgesia and even into light anesthesia. This increases operating time and is indicated in treatment of extremely painful conditions. I have employed this procedure for numerous extractions of deciduous and pyorrheal teeth.

8. For extractions, a rubber mouth prop is placed on the opposite side of the field of operation. As the patient self-administers the analgesia I cover the mouth with a square pad of gauze, so that breathing will be entirely through the nose. When the patient reaches the operating stage, this pad of gauze serves as a throat curtain; it is placed behind the tooth or teeth to be extracted or the abscess to be opened. The gauze prevents aspiration of blood, mucus, débris.

Comments

The analgesic stage lasts from one-half minute to a minute and one-half, and can be extended indefinitely by the patient.

In the stage of analgesia, the respiration deepens but the frequency does not change. In analgesia the eyelid reflex is present but sluggish. The eyeballs are "lazy," oscillate slowly. The face may be slightly flushed.

I have used self-administering analgesia in more than 3500 cases and the only untoward symptom was excessive perspiration in a few cases. This might have been due to nervous reaction and not to the analgesia. Aside from this there is no unpleasant after-effect. Headaches, nausea rarely occurred; vomiting never, even when analgesia was employed after the patient had par-

taken of a heavy meal. Ambulatory patients were permitted to depart unattended within a few minutes after the apparatus was removed.

In numerous instances I have employed analgesia for operative and surgical procedures on pregnant women. Whether early or late in pregnancy the reactions were normal with no ill effects on mother or future child.

Contraindications

Contraindications are few: Patients with severe respiratory disturbances (nose colds), or any active chronic organic ailment who would be a risk for any type of service, should not be subjected to the use of analgesia.

15003 *St. Clair Avenue.*

Essential Features of Rheumatoid Arthritis and Osteoarthritis (An Abstract)

[From J.A.M.A. 119:1095 (August) 1942: Primer on Arthritis Prepared by a Committee of the American Rheumatism Association.]

Clinical Differentiation

	Rheumatoid Arthritis Atrophic arthritis Proliferative arthritis Chronic infectious arthritis	*Osteoarthritis* Hypertrophic arthritis Degenerative arthritis Menopausal arthritis Senile arthritis
Geographic distribution	Most common in temperate climates; rare in the tropics	Climate not a factor
Family history	Often a history of rheumatic fever or rheumatoid arthritis in an immediate member of family	Frequently a history of a similar form of arthritis in one or both parents
Past history	Occasionally a history of rheumatic fever; frequently of tonsillitis or sinusitis	Not characteristic; sometimes a history of trauma or faulty body mechanics
Age at onset	Any age; over 80 per cent between 20 and 50	Rare before 40
Mode of onset	Rarely acute; usually sub-acute or insidious; often accompanied by migratory pains	Insidious; not accompanied by migratory pains
Patient's general condition	Usually undernourished, anemic, and "chronically ill"; frequently slight fever (99+F.) and slight leukocytosis	Well nourished, frequently obese; not anemic. No fever, no leukocytosis
Involvement of joints	Symmetrical and generalized; proximal interphalangeal joints especially involved	Usually weight bearing joints, spine, hips, knees; distal joints of fingers (Heberden's nodes)
Appearance of joints	Early: periartericular swelling, fusiform fingers	Early: slight articular enlargement
	Late: ankylosis, extreme deformity, ulnar deflection	Late: more pronounced articular enlargement; limitation of motion usually slight; never ankylosis; Heberden's nodes
Muscular atrophy	Often pronounced, particularly in later stages	Not characteristic
Cutaneous changes	(1) Extremities frequently cold and clammy; skin atrophic and glossy; redness of thenar and hypothenar eminences (2) Psoriasis occasionally present	No characteristic features
Subcutaneous nodules	Present in 15 to 20 per cent of cases	Not present

Laboratory Differentiation

Agglutination reaction with hemolytic streptococci	Positive in about 50 per cent of typical cases	Never definitely positive
Sedimentation rate	Usually greatly increased; tends to return to normal as patient improves	Normal or only slightly increased
Roentgenologic appearances	Early: osteoporosis, periarticular swelling and joint effusion Late: narrowing of joint space, bone destruction, ankylosis and deformities	Early: no osteoporosis; slight lipping at joint margins Late: Marked lipping, osteophytes, narrowing of joint space, deformation of articular bone ends

The Editor's Page

PAIN IS A complex, subjective phenomenon. It has neither weight nor color nor sound. It cannot be measured or recorded. The manifestations of pain, however, are objective. The drawn and hippocratic face, the shrieks of pain from the accouchement table, the groans of pain and distress that are heard in the dental chair—these are among the experiences that man records and announces with his vocal cords, his muscles, and his entire physical being. It is paradoxical that the force that sets in motion these overt reactions is an unknown force. The chemical products that result from tissue injury and produce an hyperexcitability of sensory nerve endings are unknown.

Sir Thomas Lewis[1] states in a recent publication that the potassium ion and some changes in the hydrogen ion concentration are the chemical explanations for the hyperalgesic state. He does not explain, however, the precise chemical mechanism that takes place in the tissue cell as a result of irritation or injury. Whatever the chemical reaction, it is immediate and varies in intensity according to the degree of the excitant or the tolerance of the cell. Even if the exact chemistry of the pain phenomenon were understood and chemical counter-balances were discovered, only anticipated pain could be controlled. But this is exactly what we now do with anesthetic agents. Anesthetic agents, of a general or local type, so change the chemistry of the cell metabolism that the receptors of pain are made insensitive or the higher brain centers are so altered that pain is not recorded in the consciousness. Pain is an immediate response to tissue injury as represented by the reaction to sudden trauma or a burn; or pain may be a prolonged response from irritation as exemplified by the pain from infectious processes or neoplasms. Whether the tissue chemistry in acute and chronic pain is the same is not explained by Lewis.

Tissues of different embryonic origin, according to Lewis, react differently in tone and quality. Ectodermal structures, the skin and the mucous membranes of the mouth and anus, will react to painful stimuli in a different fashion from mesodermal tissues. The stimulation of ectodermal tissues gives a superficial, easily recognizable response. Pain from the deeply mesodermal tissue, however, is often associated with a fall of the blood pressure and sensations of nausea and depression. This is the so-called sickening pain. Endodermal tissues, on the other hand, are insensitive.

Lewis explains at some length the nocifensor phenomenon. This represents a system of nerves in the skin and mucous membranes which are concerned with the local defense against injury. He explains the widespread tenderness that results in contiguous tissue as a result of purely local irritation; for example, if a localized area of oral mucous membrane is stimulated or if nerves leading to the dental pulp of upper teeth are irritated, the entire area representing the whole territory of distribution of the second division of the fifth nerve becomes hyperalgesic. The pain in the entire face, with the exquisite tenderness of the contiguous tissues, often associated with pulpitis, is an expression of the nocifensor phenomenon. The tone and quality of pain vary with the stimulant and with the duration of the stimulant's action and with the emotive state. People vary in their tolerances to pain and the same person varies from time to time. The tolerance to pain is not a constant.

Experiments with the use of procaine in the control of the severe chronic pain associated with the myalgias open new territories for investigation. Travell, Rinzler and Herman[2] found that chronic disability of the shoulder and arm was relieved by the intramuscular injection of procaine hydrochloride. Their explanation is this: The anesthetic agent relieves the muscle spasm which in turn is responsible for ischemia of the tissues. With the relief of ischemia, range of motion is increased, with the consequent breaking up of adhesions and the absorption of exudates. Heretofore, we have used procaine hydrochloride as a preoperative agent. Its use as a therapeutic agent in chronic myalgias and the pain associated with other chronic inflammatory processes opens wide fields for exploration.

In this issue, Forman describes an ingenious device for the patient's administration of ethyl chloride for the relief of pain in minor surgical procedures in which deep anesthesia is not necessary.

Whoever fully explains the mechanism of pain and conquers it will revolutionize dental practice and the whole of life.

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[1] Lewis, Thomas: Pain, New York, The Macmillan Company, 1942.

[2] Travell, Janet; Rinzler, Seymour; and Herman, Myron: Pain and Disability of the Shoulder and Arm, J. A. M. A. 120:417 (October 10) 1942.

The Repair of Broken Porcelain Pontics with Acrylic Resin

MILTON TUERK, D.D.S., Bronx, New York

DIGEST

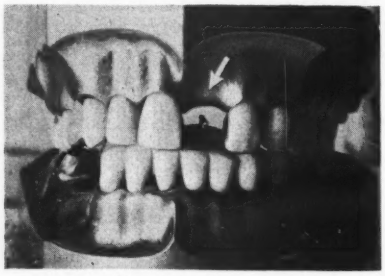
A technique is suggested for the repair of broken porcelain pontics with acrylic resins. An accurate, strong, esthetic pontic replacement is thus had which is superior to the old method of grinding-in a replacement.

The method which is inexpensive may be adapted to making pin teeth, facings, or post tube teeth for use as pontics to which the bridge backings are processed.

OCCASIONALLY THE porcelain pontic of a cemented fixed bridge may crack or break, necessitating replacement. In order to accommodate the ordinary stock teeth as a pontic for a fixed bridge considerable grinding must be done. The facing is ground, so that it closely fits the gingival tissue. Then, if a ridge lap is desired in porcelain, it is necessary to grind the ridge lap pontic (trupontic) to accommodate it to the particular ridge. Mesial and distal surfaces may also require grinding. The porcelain tooth is beveled, so that it can receive a protective layer of gold—all this grinding so alters the pontic that it no longer is a truly interchangeable tooth, but is a tooth individually suited for a particular ridge and cast gold backing. Replacement of such a pontic becomes a hit or miss affair. It is extremely difficult to grind a new facing accurately to an old backing and secure satisfactory gingival contact. If a record is kept of the mold of the facing used originally, then the results of the grinding may be better.

With the new acrylic materials it is possible to make acrylic facings with or without ridge laps. Each pontic is waxed to the particular case, thus broken pontics may be replaced with the assurance of adequate tissue contact between pontic and ridge, as well as good contact between the pontic and gold backing.

As an example I have selected to illustrate and describe in the accompanying legends the replacement of an anterior trupontic. With a little ingenuity,



Technique:

Fig. 1—The upper left central. A trupontic has cracked on this cemented bridge.

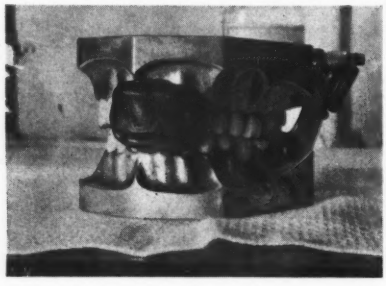


Fig. 2—A compound core impression is taken in the mouth. The impression should include one tooth on each side of the pontic to be replaced.

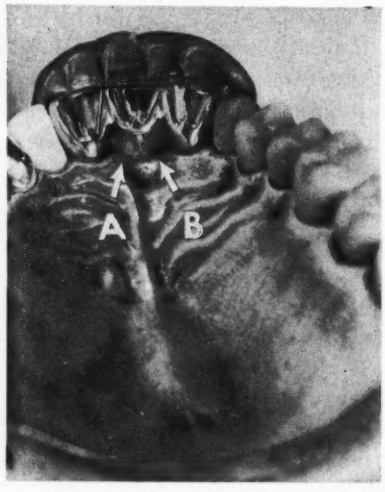


Fig. 3—Lingual view. A, Untrimmed compound; B, trimmed compound. Excess compound on the lingual is trimmed so as to permit buccal withdrawal of the chilled core.

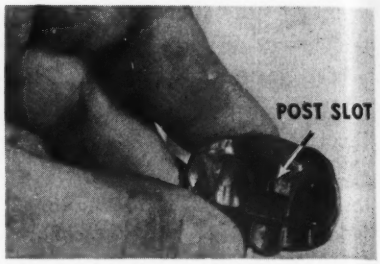


Fig. 4—Finished impression should show nice detail; however, the post hole need not be too accurate.

Fig. 5—A base metal post is inserted into the slot in the compound impression. Make sure to seat it all the way. A paper clip post may be used instead of the ready-made post. (Inasmuch as the posts are not destroyed in processing, they may be used repeatedly.)

For pointed pin teeth, two gold posts of the proper gauge are inserted into the compound impression, and the final acrylic facing is fused to these posts. The end of the gold post is bent to form a loop for retention by the acrylic.

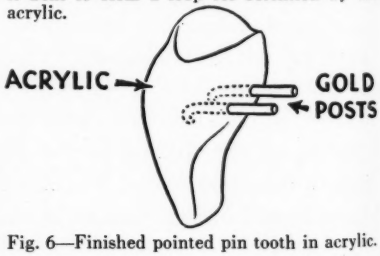


Fig. 6—Finished pointed pin tooth in acrylic.

this technique can be adapted by the dentist to make acrylic pointed pin facings, or acrylic Steele's facings or post tube teeth.

2264 *Creston Avenue.*

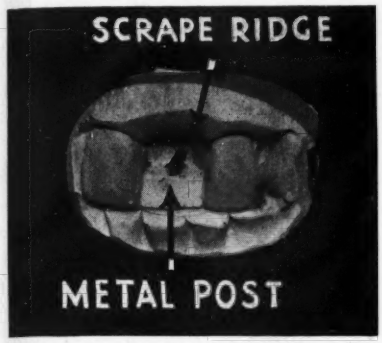


Fig. 7—A stone model is poured. Use a hard stone. The compound is removed and the paper clip or the metal post should remain embedded in the stone. The ridge area is scraped to get the desired amount of compression of tissue between pontic and ridge. Make allowance for the finishing of the acrylic ridge lap. The model is lubricated.

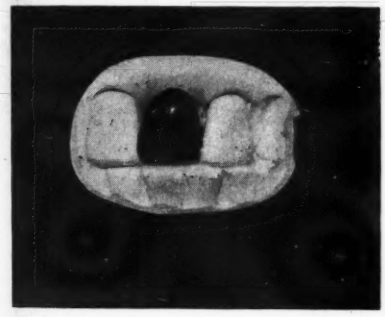


Fig. 8—A pontic is waxed on this stone die model. Use an ivory colored inlay wax so as not to stain the stone and impair the resulting acrylic shade. The pictures show a blue wax merely for photogenic contrast.

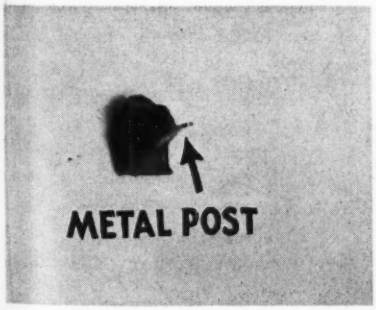


Fig. 9—Remove the wax pattern from the stone model. Insert a new metal post or paper clip into the slot in the wax pattern. The metal post or paper clip is used so that in processing we may accurately retain the slot in the acrylic material. If the posts were not employed, the accuracy of the technique would be impaired. The stone post formed, if we failed to use a metal one, would be difficult to remove from the resulting acrylic facing.

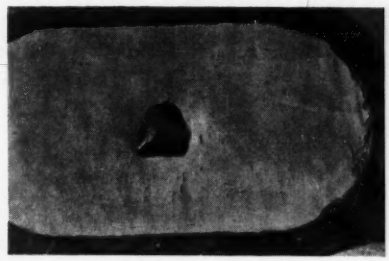


Fig. 10—Invested wax pattern in lower half of flask. Wax pattern is invested in the lower half of the processing flask; a mixture of half stone and half plaster is used. Invest with the buccal surface exposed as illustrated.

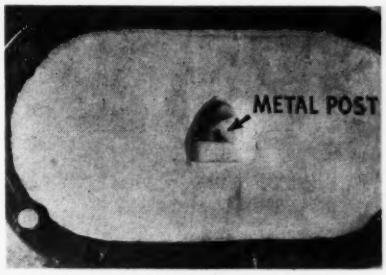


Fig. 11—Lower half of flask showing wax pattern boiled out.

Lubricate the stone and pour the second half of the flask. The wax pattern is boiled out and the two halves of the flask are separated. The metal post or paper clip should remain embedded in the stone.

The lower half of the stone pattern is painted with an acrylic separating medium.

The entire cavity is packed with body shade and a test pack is made with wet cellophane.

The flask is opened; excess removed; the incisal edge of the tooth is trimmed so as to accommodate the incisal color. The incisal shade is packed and a new test closure is made with wet cellophane.

The case is opened and all excess trimmed.

A final closure is then made, an originally tin-foiled case, acrylic separating medium, or even cellophane being used.

The case is then processed, and permitted to cool.

Fig. 12—Processed acrylic before removal from flask. The case is then opened. The acrylic tooth is removed from the investing material. It will be found that the post or paper clip will remain fused to the acrylic. The post can then be easily removed, heated thumb forceps being used to grip and pull it straight out. This leaves an accurate post hole.

Fig. 13—Processed acrylic facing unpolished. Post fused to acrylic. Lingual view.

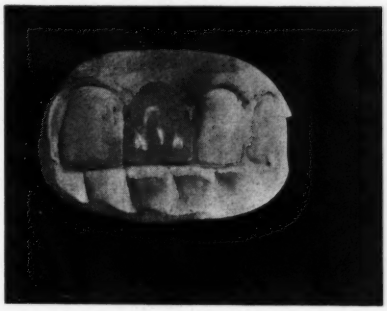


Fig. 14—Acrylic facing finished and fitted to stone model.

The acrylic facing is thoroughly cleaned, featheredges and excess are removed and then tried back on the stone model. Facing should fit as accurately as the wax pattern. The tooth is then completely polished. The ridge lap, after polishing should present a surface similar to that of glazed porcelain.

The facing should be tried in the mouth. There should be perfect adaptation of the tooth to the ridge. The facing is best cemented with one of the silicate cements.

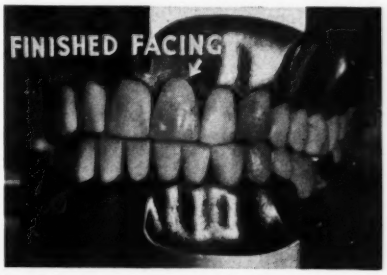


Fig. 15—Buccal view of finished facing.

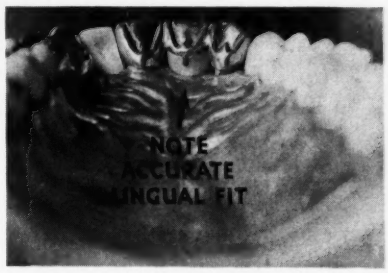


Fig. 16—Lingual view of finished facing.

Cast Gold Crown with an Acrylic Labial Veneer

LEON M. GECKER, D.D.S., New York City

THIS ARTICLE describes the construction of a cast gold crown with an acrylic labial (or buccal) veneer which has the following advantages over the usual veneer crown:

1. The veneer will not "pop" out or fracture under any circumstances.
2. Gold is not required incisally, thus a translucent, life-like tip is possible and the veneer may be matched to the newer shades of denture teeth.
3. Gold is not visible at the proximal margins.
4. Gold is likewise eliminated at the cervical margin. This allows the acrylic veneer to contact the subgingival preparation of the tooth. This feature improves the natural appearance of the restoration as does the acrylic jacket crown.
5. Underlying opacity is eliminated.
6. This acrylic veneer crown can be soldered to all types of fixed bridgework.
7. The casting may be used for bucco-lingual attachments, lingual clasps, or lock-in inlay rests.

Indications

The cast gold-acrylic veneer crown is indicated on all anterior vital or pulpless teeth when it is necessary to have a gold proximal surface for bridge attachment purposes. It is especially indicated when malformed or carious teeth cannot be suitably prepared for three-quarter crowns. It can be effectively employed when a jacket crown would ordinarily be needed and a gold proximal surface is indispensable for adjacent prosthesis. It can be used as an individual restoration in close-bite cases.

Technique

Preparation of Tooth—The tooth is prepared in the following general steps:

1. Disc off all bulges and contours as for a full cast crown.
2. The tooth is shortened by grinding off incisally.

DIGEST

The construction of a cast gold crown with an acrylic labial (or buccal) veneer is described.

This crown is indicated (1) on all anterior vital or pulpless teeth when it is necessary to have a gold proximal surface; (2) when malformed or carious teeth cannot be suitably prepared for three-quarter crowns; (3) when a jacket crown would ordinarily be needed and a gold proximal surface is required; (4) for an individual restoration in close-bite cases.

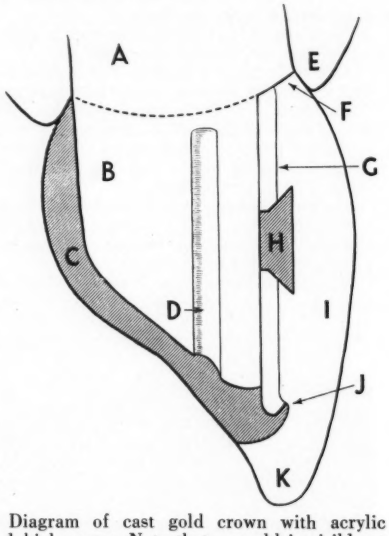


Diagram of cast gold crown with acrylic labial veneer. Note that no gold is visible at any point; the veneer can be matched to adjoining jackets, because of elimination of underlying opacity; no proximal or lingual shoulders are necessary on the preparation; tip is translucent; there is no gold at the cervical. A, Root; B, prepared tooth; C, gold cast crown; D, two vertical grooves (as in three-quarter crown); E, free margin of gum; F, no gold on labial of shoulder; G, frame retention around complete periphery; H, horizontal retention for veneer (takes the place of gingival gold); I, acrylic veneer; J, sagittal view of peripheral frame retention (undercut) for veneer; K, translucent tip.

3. Bite clearance is established. Parallel grooves are ground on proximal surfaces (walls) as for a three-quarter crown.
4. A shoulder is cut beneath the free margin of the gums on the labial surface only.

Note that the preparation combines three classical types: (a) the full cast crown; (b) the three-quarter crown; (c) the labial shoulder as in jacket crown preparations.

Construction of Crown—1. Take a compound impression of the prepared tooth, using a copper or aluminum tube as for a porcelain jacket. Set aside.

2. Take a wax impression of the tooth, using a festooned celluloid form.
3. Box the tube impression and pack in quick-setting stone.
4. After the stone has set, and the model has been trimmed, take a tube re-impression of the model. Lubricate the stone model with vaseline and use the same copper tube. Set the stone model aside for later use.
5. Pour the re-impression in investment stone. Two models are now had.
6. With the wax impression that had been set aside, a completed carving is made by placing the celluloid form on the stone model, stripping off the celluloid form, and adding wax where needed. (Lubricate the model before waxing.)
7. The wax carving is now removed from the model and tried in the patient's mouth. After corrections are made, it should resemble a jacket crown.
8. Using a sharp, pointed instrument, scratch the veneer outline on the wax crown.
9. Remove from the mouth and replace on the investment model.
10. Complete the trimming of the wax by removing all wax on the labial surface to the scratched veneer outline, leaving a horizontal bar of wax across the labial surface, midway between the incisal and gingival limits.

11. Sprue on the lingual, and cast in medium hard gold.

12. Fit the casting in the mouth and make necessary adjustments. The gold may be polished at this stage.

13. Prepare the retention for the acrylic veneer by drilling an undercut frame around the complete periphery of the casting, and by grinding the labial horizontal bar to a dovetail shape (viewed laterally). This bar takes the place of the customary gingival retention.

14. Wax the veneer crown in the mouth to correct the shape. Ivory tinted wax is used. Remove and place on the stone model. At this point, the cervical waxing is completed.

15. Flask with the model in the lower half of the acrylic flask. Complete.

16. In processing, cover the horizontal bar with opaque acrylic before packing selected shades.

Comments

If the crown is to be used as an abutment in soldering, the soldering should be done before processing the veneer.

Seats for lug rests or boxes for precision attachments can be prepared when waxing or after casting the gold crown.

30 *West Fifty-Ninth Street.*

Removal of Porcelain Jacket Crown

(*An Abstract*)

[From the Bulletin of the Ninth District Dental Society of the State of New York, April, 1942.]

To REMOVE a porcelain jacket crown without fracture:

1. Place an over-sized unannealed copper band on the crown so that it is completely covered. The band should extend at least 5 mm. below the incisal edge of the crown.

2. Remove the band and perforate.

3. About 5 mm. above the incisal end, attach a wire loop of generous size.

4. Fill the band with softened compound and place over the jacket crown.

Allow hardening.

5. Place a hooked instrument in the metal loop and tap the instrument until the crown is loosened.

6. Place in warm water to soften compound.

7. Remove the crown.

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CHRISTMAS SEALS

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The Patient's Headlight

JEROME J. PAVLIGER, D.D.S.,
Oakland, California

DIGEST

Improved dental illumination must follow the progress of dentistry. A steady work-bench light in the mouth is now possible with a patient headlight devised from the operator's headlight. It is simple and inexpensive and offers a technique for lighting previously impossible.

ALTHOUGH I worked with the elaborate fixtures available, I still felt the need for light in those inaccessible locations in the mouth and came to the conclusion that it was the quality and arrangement of light rather than the volume and intensity that were lacking. Experimenting led to the patient's headlight.

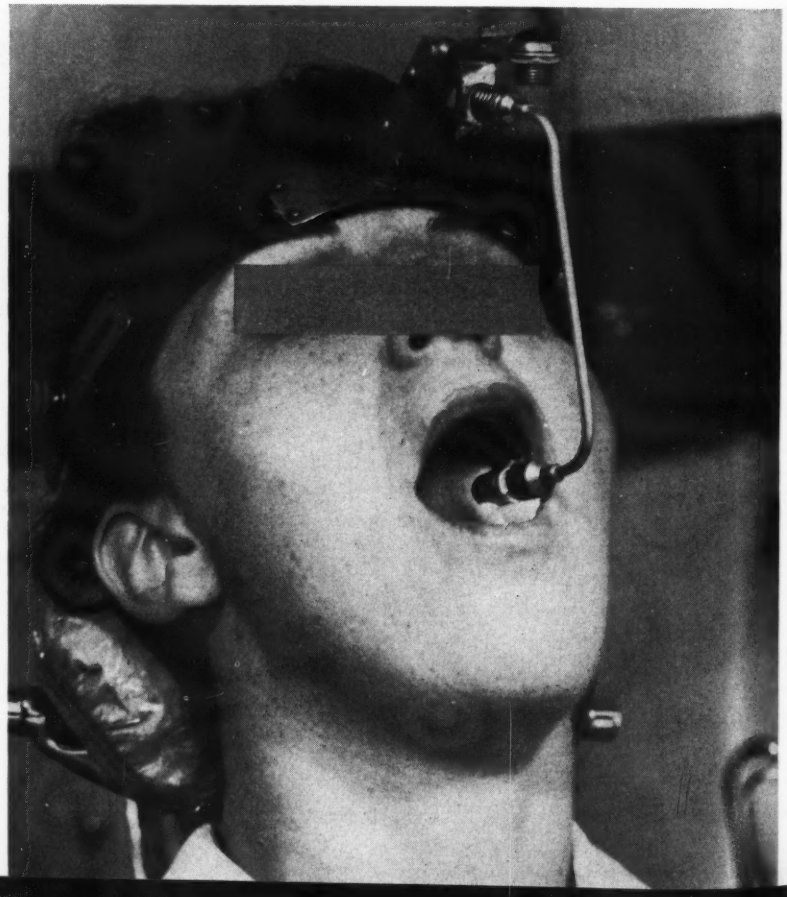
This instrument follows the patient and not the operator or his assistant. Unlimited adjustment is possible with the ball and socket joint and the movable light shade. The light shade also eliminates glare. Only a small part of the working space available in the mouth is occupied by this light. Services of an assistant for its use are unnecessary.

The patient wears the headlight for only a short time, whereas with the dental headlight there are discomforts for the dentist who must operate on many patients over long periods.

In my office the cord plugs into a socket on the wall behind the patient's head, 6 feet above the floor. This eliminates the possibility of a tangled cord.

Dental headlights are quickly and inexpensively converted into patients' headlights in about fifty minutes and for fifty cents.

Fig. 1—Dental headlight in position on operator's head.
Fig. 2—Dental headlight adjusted for use by the patient.



Equipment

Parts can be secured at any radio or hardware establishment: 1 dental headlight; 1 radio pilot light socket; 1 flashlight extension; 1 flashlight bulb; 1 radio pilot light shade.

The electric cord may be plugged into an electric bell transformer or flashlight for electric power.

Dental Headlight—Unscrew the flashlight extension which is bent suitable for use in a patient's mouth. Replace with a straight flashlight extension, and the converted dental headlight is available.

Transillumination Diagnosis—Bend the flashlight extension to a right angle at the end supporting the bulb. The light is then held in the hand in the manner of other transilluminators. A rheostat may be added.

1904 *Franklin Street.*

Pulp Capping

(An Abstract)

WILLIAM J. SIMON, B.A., D.D.S., M.S.D., Minneapolis

[From North-West Dentistry, 21:134 (July) 1942.]

IN THE complete removal of carious débris from a cavity, even a careful operator occasionally exposes some part of the pulpal tissue of a tooth. This exposure manifests itself as a small spot formed by effusion of blood referred to as "petechial hemorrhage." When this condition occurs there are only three procedures to follow: (1) this exposed tissue can be capped; (2) the tooth can be devitalized, or (3) this tooth can be extracted.

TABLE 1—*Results of Ninety-Three Pulp Cappings*

Legend	Number of Cases	Percentage Unsatisfactory	Percentage Indeterminate	Percentage Satisfactory
1. Teeth extracted or pulps removed	37	40		
2. Teeth revealing changes in vitality:				
a. Nonvital	9		9	
b. Partly vital	8		9	
c. Hypersensitive	3		3	
3. Teeth revealing secondary dentine	14		15	
4. Teeth tender to percussion	5		5	
5. Teeth normal in every respect	17			19
Total	93	40%	41%	19%

TABLE 2—*Results of Ninety-Three Capped Pulps with Respect to Age*

Age Group	Unsatisfactory	Indeterminate	Satisfactory
0-20	10	15	6
21-40	20	10	5
41-N	7	14	6
	37	39	17

Contraindications

Pulp capping should be attempted only in exceptional cases and then only after the history of the tooth in question has been thoroughly studied. Pulp capping is contraindicated in those cases in which: (1) it is impossible to remove all caries without involving so much of the pulp that extravasation of blood and necrosis of the pulp are inevitable; (2) pulp capping should not be attempted if by clinical tests the operator perceives that the pulp has been infected and is undergoing retrogressive degenerative changes.

The primary factor which reflects the success of the pulp capping operation is the condition of and the injury to the pulp at the time of exposure. Secondary to this are factors of age and physical condition of the patient.

It is not an uncommon clinical experience in excavating caries to uncover secondary dentine and to discover a marked recession of the pulp from the invading lesion. Such cases require a conservative treatment not entirely unlike pulp capping; however, in cases such as these, the treatment is spoken of as "pulp protection." For purposes of clarity in this article, "pulp capping" shall refer to those cases in which there is petechial hemorrhage.

Methods of Pulp Capping

It is axiomatic that whatever materials may be used, the materials should not be irritant nor should they create a pressure upon the pulpal tissue. Continuous pressure as well as irritants on any soft tissue of the body will produce an atrophy of that tissue. Atrophied tissue may undergo further degeneration which sometimes is not conducive to a successful pulp capping. A variety of techniques have been evolved based on this principle.

Pulp Capping Materials

Of all the pulp capping materials, one is no better than the other if the operator fails to select his cases by means of a differential diagnosis and to follow a technique that is sound physiologically and pharmacologically.

There have been three pulp capping materials in vogue at the University of Minnesota: (1) thymol preparations, (2) cement plus eugenol in the liquid, and (3) zinc oxide-eugenol paste. Zinc oxide-eugenol paste was the most favored in 622 cases.

To determine which of the three materials was the best, it was necessary to recall the 622 patients. Cards were mailed to each of these people and ninety-three patients returned for a recheck consisting of a second roentgenologic and clinical examination.

From Table 2 it is apparent that it is not possible to state definitely at what age pulp cappings are most successful. Age must be recognized as a chronologic factor and an operator will do better to consider the condition of and the injury to the pulp at the time of exposure as the primary factor that reflects the success of the pulp capping operation.

(Continued from page 544)

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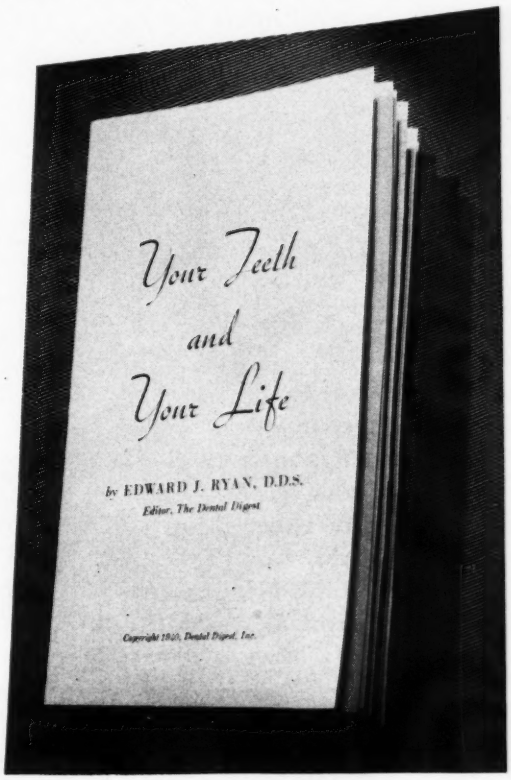

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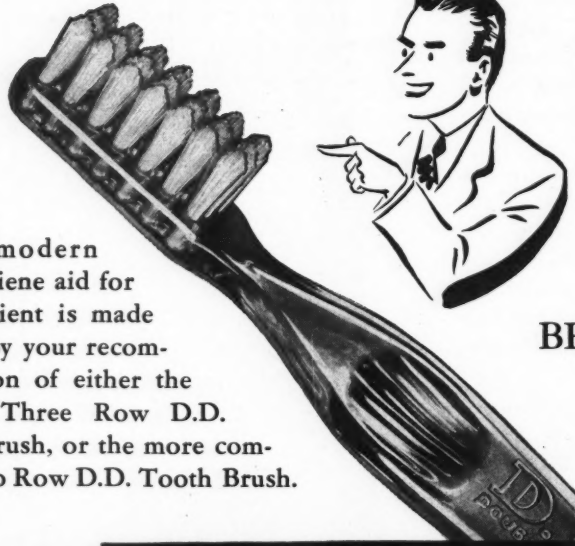

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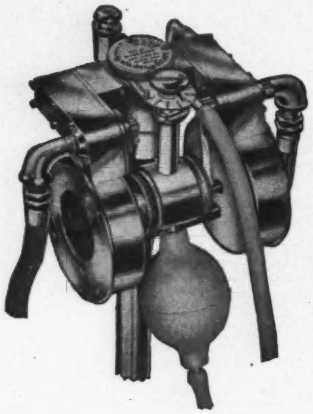

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In either case, it will be to your advantage to investigate the time-saving and practice-promotion possibilities of the McKesson Easor. Patients who undergo dental treatment with the aid of McKesson nitrous-oxide analgesia are relaxed, calm, cooperative. Interruptions due to operative pain are avoided. The result is ideal operating conditions both for the patient and the operator.

With the aid of McKesson analgesia you can have *more time* for *more patients.* Return the coupon and let us tell you what the Easor is doing in other practices; how easy it is to operate; how easy it is to own. Return the coupon on page 547. There is no obligation.

McKesson Appliance Co.
Toledo, Ohio

Contra-Angles

Tires and Tubes . . .

Although federal regulations have been changed somewhat to allow dental surgeons and itinerant dentists to secure tires and tubes, there is no reason for dentists as a whole to think that they will have unlimited supplies. As a matter of fact, only those dentists who can prove that they need tires to perform the essential function of caring for emergency cases and relieving severe suffering can be eligible for tubes. It is interesting to see that the old expression, "itinerant dentist," appears in the new regulations. We thought that the "itinerant dentist" had gone with the horse and buggy. With the return of the horse and buggy the itinerant dentist seems to have been resurrected. An itinerant dentist is one who performs dental services in several communities.

Although the new regulations require that the "appropriate state authorities" give the order to dentists, it would be well if the government were to give this function to dental societies. It could be sure that dental societies, jealous of their standing in the community, would never authorize the purchase of rubber by undeserving dentists. The delegation of this authority to dental societies would have a fine effect on public relations in that the societies would be constantly designating that dentists were not raiders of the Nation's rubber supply. Dentists as a group, it would thus be seen, were not asking for special privilege but rather in their organization were tough enough on their own members to guarantee that no one received rubber priorities without showing good cause.

No group in any community likes any other group that tries to put itself up as a favored class. Some physicians have felt the sting of public resentment when they secured tires and tubes which

At no cost to yourself, you can help a brave brother dentist

THE DENTAL DIGEST prints this advertisement in an effort to help a courageous dentist, Dr. Russell Panzica. Under 40, Doctor Panzica is the victim of multiple sclerosis.

Unable to practice, he is working bravely to support his family by selling magazine subscriptions. You can send him your 1943 renewal orders now, and

YOUR CHRISTMAS

GIFT SUBSCRIPTIONS

at publishers' regular rates:

The Reader's Digest: $3 yearly; $5 for two years. Gift subscriptions, for boys in military service, are only $1.50 each.

Coronet: $3 yearly; $6 for two years. Special: $1 for 6 months.

Esquire: $5.00 yearly.

Time: $5 yearly; $3.50 yearly for boys in military service.

Life: $4.50 yearly; $3.50 yearly for boys in military service.

Fortune: $10 yearly; $6 yearly for boys in military service.

You may also include subscriptions for any other magazines.

Please make your checks payable to the magazines themselves, but send to

Russell Panzica, D.D.S.
717 Seventh St.
Buffalo, N. Y.

The ORIGINAL Plastic

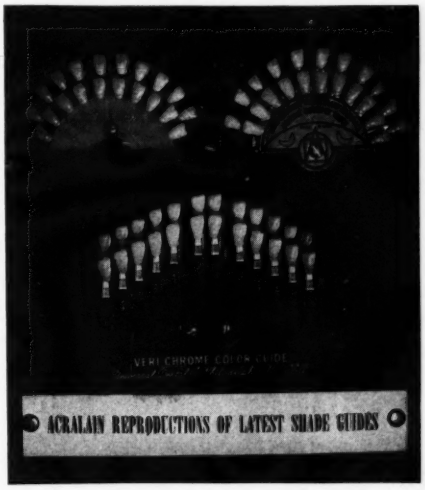
ACRALAIN

Reg. U. S. Pat. Off.

for More Natural Looking Restorations

The first of the dental plastics, it pioneered the field and definitely proved their usability for restorations.

ACRALAIN established itself immediately. It solved one of the greatest of restorative problems — it provided the impact strength to resist functional shocks and stresses, and the resilience to absorb them. Breakage is practically eliminated.



ACRALAIN offers you unlimited shade matching facilities. Premixed powders duplicate New Hue, Veri-Chrome and Myerson shades. Regular ACRALAIN shades and ACRALAIN Basic shades meet ALL other shade requirements.

Restorations of ACRALAIN are beautifully translucent. Lighter at the incisal tip, they blend to a darker hue with greater opacity toward the gingival.

Dentistry's First Choice for FULL and PARTIAL DENTURES of DISTINCTION

ACRALITE contains no foreign materials, no plasticisers. It is a chemically pure methyl methacrylate. Scientific blending assures purity; constant testing assures uniformity.

ACRALITE CO. Inc. 257 W. 38th St., New York, N. Y.

Many Dentists are now earning $5.00 IN TEN MINUTES with YOUNG'S *sensational new Reliner*—LIN-O

With LIN-O you can build up a perfect fitting denture within ten minutes, that will last for months and will not slip out of place after patient leaves your office. Patients gladly pay up to $10.00 for a LIN-O reline because it is so comfortable . . . odorless and tasteless . . . will not burn nor irritate delicate tissue—acid and moisture proof. Eliminates the inconvenience of adhesive powders.

You can build a steady and profitable practice, and solidify the friendship of your patients, with LIN-O because when they once wear a LIN-O reline they will not be satisfied with ill fitting, uncomfortable, inconvenient dentures.

LIN-O comes in stick form—no solvent needed, will not deteriorate with age, thus eliminating waste.

LIN-O has been tested by the Young Dental Mfg. Company—in business over 42 years—and is sold on a money back guarantee if you are not entirely satisfied.

Order at once from your dealer. If your dealer cannot supply you, order direct. Box of 9 sticks $2.50, box of 15 sticks, $3.50.

YOUNG DENTAL MFG. CO. 4958 Suburban R. W. ST. LOUIS MO.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS, OF AUGUST 24, 1912.

Of The Dental Digest, published monthly at Pittsburgh, Pa., for October 1, 1942.

State of Pennsylvania,
County of Allegheny,
ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of The Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher and editor, are: Editor, E. J. Ryan, B.S., D.D.S., 708 Church Street, Evanston, Ill., Publisher, M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.

2. That the owners are: Dental Digest, Inc., 1005 Liberty Ave., Pittsburgh, Pa.: Oral Hygiene, Inc., 1005 Liberty Ave., Pittsburgh, Pa.; M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.; Louise A. Smith, Hotel Schenley, Pittsburgh, Pa.; Lynn A. Smith, 1005 Liberty Ave., Pittsburgh, Pa.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company is trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

(Signed) M. B. MASSOL,
Publisher.

Sworn to and subscribed before me this 22nd day of September, 1942.

(Seal) E. G. Burgdorf, Notary Public.
(My commission expires May 16, 1944.)

Still Available

COGSWELL'S

"DENTAL ORAL SURGERY"

A text book for the general practitioner . . . and for the man who specializes. **Price, $10.**

Through your dealer, or direct

THE DENTAL DIGEST 1005 Liberty Ave. Pittsburgh, Pa.

they used to transport themselves to the golf course or their children to school or their wives to a bridge party. One physician in the Middlewest secured some new tires and proceeded on a fishing trip. According to the papers, he was seized en route and the tires were taken from him. That kind of publicity did that physician no good nor did it do his profession any good.

How many of us can honestly justify a demand for tires and tubes? How many house calls or hospital calls does the average dentist make in the course of a year? How many times is a dentist pried loose from a warm bed at night to answer an emergency call? I think it will have to be admitted that none of these emergencies happens very often. Except for an occasional dentist in a small town, most dentists can do very well by using public conveyances. By so doing, we are putting ourselves in the category of most of the other people in the Nation who are not pleaders for special privilege, and consequently, we are strengthening our public relations.

The World's Best . . .

American dentistry is known throughout the world as being the best. We have built this reputation on our highly developed technical skills. Now we find the paradox in some dental circles of dentists who would renounce the factor that gave us our greatest fame. There are dental educators who turn their noses up at technical skills and seem to think that the only values in dental education are found within the framework of the medical sciences and biologic fundamentals. European educators made that same mistake. Many European dentists know a lot about histology and neurology and other sciences, but find themselves fumble-fingered in the laboratory or at the operating chair. For the most part, patients come to us to have disease relieved and lost parts restored. True enough the recognition and eradication of disease and the restoration of lost parts call for a sound appreciation of the biologic fundamentals and no one would depreciate the value of this knowledge. But the actual procedures to correct dental disease are basically mechanical. So, too, are the procedures of the general

IN 7 NEW-DENTURE CASES OUT OF 10

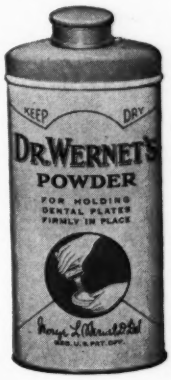
DR. WERNET'S POWDER

may make all the difference!

Shorten the difficult "learning" period for the majority of your patients with Dr. Wernet's powder.

To claim that without the use of Dr. Wernet's Powder a denture will be unsuccessful is of course absurd; but dentists tell us that 70% of new-denture cases develop a higher degree of security and definitely faster control through the use of this premier powder.

Admittedly those first two or three weeks while the new denture is seating itself are a make-or-break period for you and your patient both, since the latter invariably measures your work by how quickly he or she can eat and talk —and smile—with confidence. And the finest denture ever made may not survive this period unless there is proper cooperation, and a denture "help" like Dr. Wernet's Powder.

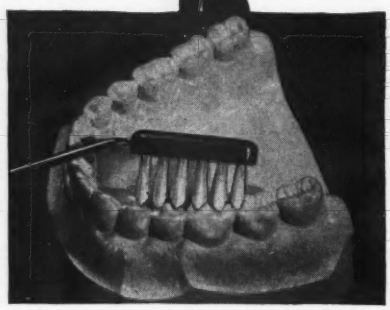


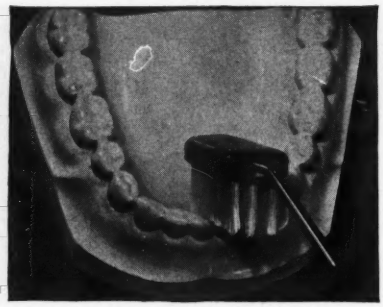
Fifty percent more viscous, 46.5% more absorbent, 26.1% whiter and purer, Dr. Wernet's Powder is as safe as it is soothing and digestible.

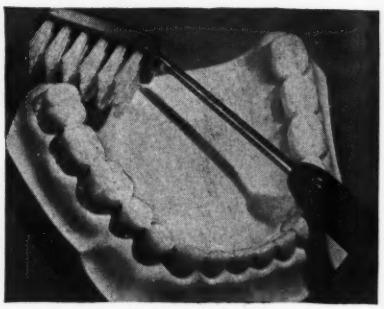
Write for your free supply of Dr. Wernet's Powder. Wernet Dental Mfg. Co., Dept. X-7, 190 Baldwin Ave., Jersey City, N. J.

ADAPTS THE **PATIENT** TO THE DENTURE

Consider the Practical Advantages of this *Uniquely-Designed Toothbrush*







NATURALLY, when a patient asks you for advice about a toothbrush, you are going to suggest one that does an effective cleansing job. That's why we believe that, once you know its advantages, you'll recommend the Squibb Angle Toothbrush.

How is it different?

In the first place the Squibb Angle Toothbrush does not have the usual straight bulky handle and big brushhead, but a thin metal shank and a small tapered brushhead. Next, the shank isn't straight, but is bent at an angle—just like your mouth-mirror.

Why is it more effective?

Look at the illustrations and see how the unique construction of the Squibb Angle Toothbrush makes it possible to do an effective cleansing job. You can bring the brush head down to the gum line while keeping the handle in practically horizontal position. When brushing lingual, buccal or occlusal surfaces, the bristles are easily brought into contact with interproximal spaces. You can clean exposed surfaces of all teeth whether the dental arch is wide or narrow; and with any brushing technique.

The fact that the brush has Synton bristles contributes further to its effectiveness—for these high quality synthetic bristles provide greater resilience, resistance to sogginess, and, under ordinary usage, longer retention of shape. Two degrees of stiffness are available — hard and medium.

The Squibb Angle Toothbrush is a brush you will like to use yourself—one you will be pleased to recommend to your patients.

The Forgotten Tooth Becomes the Remembered Tooth with the

SQUIBB *ANGLE* TOOTHBRUSH

surgeon. The general surgeon must primarily be skillful with his hands and be possessed of mechanical aptitudes. If there is added to this, broad basic knowledge and sound judgment, there is a competent person, indeed.

There are dental educators with delusions of grandeur who are pretenders to the medical throne. These men are trying to make scientists and physicians of young men and women and are giving them only a smattering of technical training. If we follow this course, dentists in the United States may easily find themselves at about the same level of dentists in some of the European countries—learned in the medical arts but dumbfounded at the operating chair. Engineers emphasize mathematics and physics but they are also prompt to admit that they build things with their hands, they create by mechanical skills, and they are not afraid to get their faces and hands dirty.

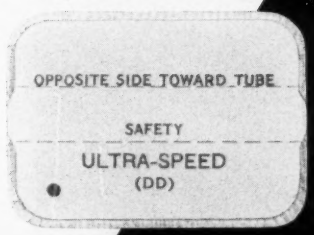
Too many dental deans stand in awe of their medical teaching colleagues. Too many deans are fearful to get up at a faculty meeting and champion the cause of technical dental training. Too many deans are under the domination of the medical faculties. There has been fear expressed in some parts of the country that medicine, amoeba-like, is trying to digest dentistry. Unfortunately there is some evidence to substantiate this. Rather than being shadowy physicians, let us be proud of our expertly developed technical skills and let us keep right on telling the world by our practice how good we are as dentists. I do not believe that any dentist can practice intelligently and well without a correct conception of the medical fundamentals, but I believe with equal vigor that no dentist can practice well without the incomparable technical skills for which American dentistry is noted. Some of our deans, I fear, have forgotten these self-evident truths.

The Dental Hygienist—Is She Here to Stay? . . .

After more than twenty years we should know whether the dental hygienist is here to stay or not. We should certainly know whether she performs a mission of help or is a detractor in dental practice. Debating before the Chicago Dental Society on the subject,

COMPARE....

1 SPEED
2 DETAIL
3 CONTRAST



. . . and you'll specify Eastman Ultra-Speed Periapical Dental X-ray Film

This new double-emulsion film is so very fast . . . and assures such fine detail and brilliant contrast . . . that a thorough trial is a "must" for everyone who prefers so-called "speed" film. Fraction-second exposures* at the usual anode-film distance minimize the time required for periapical radiographic examination, the chance of movement during exposure, and wear on the x-ray unit. The film is ideal for the long-anode-film-distance (20-in.) technic.

"Open-Easy" 1- and 2-film standard-size packets have blue-white, moisture-proof paper wrapping . . . lead-foil backing . . . smoothly rounded corners, and softly curved edges.

Ask the dental salesman who calls on you regularly for further details and prices—his service warrants your orders. . . . Eastman Kodak Company, *Medical Division*, Rochester, N. Y.

*Required exposure only ⅛ that for Eastman *Regular* Periapical (and other single-emulsion films of like sensitivity); only ¼ that for Eastman *Radia-Tized* Periapical (and other double-emulsion films of like sensitivity) and Eastman *Rapid-Processing* Periapical.

Eastman X-RAY Materials
. . . THE COMPLETE LINE

Included **are Eastman *Rapid-Processing* Periapical Dental X-ray Film (R-P) and Eastman Radia-Tized Periapical Dental X-ray Film . . . both double-emulsion ("intermediate"); Eastman Regular Periapical Dental X-ray Film . . . single emulsion ("slow").**

In your ORAL HYGIENE this month

An Oral Hygiene writer questions dentists

In an effort to obtain an answer to the question, "What is the individual dentist thinking about?" John W. Schaefle questioned dentists face-to-face. He "visited dental offices in professional buildings and those reached by treading creaking stairs." He "saw dentists trim and aseptic looking; ones who exuded an air of confidence," and, he continued, "There were others . . ."

But, whoever they were, he "carried away the idea after visiting them that they were confused, and souls in need of strong leadership."

That is the text of his article, "And the Greatest of These is Leadership," in your November ORAL HYGIENE. It is typical of ORAL HYGIENE's original approach, its habit of digging for facts.

"There is No Shortage of Dentists," by Doctor Daniel Ross, is a challenging article telling how state barriers limit the proper distribution of dentists in a wartime world.

Marguerite McClain's "A Dental Wife Tells of Pearl Harbor" provides three pages of history—and thrills.

When a soldier is too ill to visit the dentist, a new device brings dental service to him. Major R. D. Watkins, D. C., describes the new hospital dental cart.

Doctor John W. Richmond says "*Now* is the Time to Plan," because "carrying the emergency dental setup over into peacetime will endanger the dental profession's future."

"Don't be an Average Dentist," warns Doctor E. R. Swank—sound advice on *today's* dental practice management.

Don't miss the new pictorial feature, "How to Kill a Dental Practice."

And ORAL HYGIENE's popular departments round out the November issue—including Doctor George R. Warner's new department, "What is *Your* Diagnosis?"

In your NOVEMBER

Oral Hygiene

George Siewert of Milwaukee took the affirmative and contended that the hygienist performed a worthwhile mission. Arguing the negative, was Russell Tench of New York.

At the present time there are thirty-three states in the Union, the District of Columbia, and the Territory of Hawaii that recognize the dental hygienist. The other fifteen states in the Union do not have hygienist laws. In these states the argument has been frequently heard that the hygienist is an usurper; that she presents a threat in white to the dental practitioner. The experience, however, in the thirty-three states, the District of Columbia and the Territory of Hawaii should put at rest such fears. In more than twenty years there has been only one reported violation of the Dental Practice Act by a dental hygienist in the state of Wisconsin. The people who know her best describe her as being loyal, cooperative and efficient. Those who know her not at all are the ones who fear her. She is better trained to perform her job, namely, the scaling and polishing of teeth, than the dentist is trained to perform this service. In some of the schools for hygienists as much as 150 hours of training in prophylactic treatment are required.

Siewert in his argument for the hygienists pointed out, quoting figures of the United States Public Health Service, that caries in the mouths of school children increases six times faster than teeth are being restored. In other words, no present program has been devised to keep up with the progress of tooth decay. If we actually believe that preventive dental care is of value, we should do more about it. If tomorrow the American people suddenly were to be inoculated with some virus of recognition of the value of dental health and began flocking to the dental office, every dentist in the United States would have ten new patients a day. Obviously little restorative dentistry could then be performed for each one. Such a dental demand would tax and exhaust the facilities of existing dental personnel and the hygienist would be essential to practice. Even as it is, however, her services could expand our usefulness by her educational help among patients and potential patients and by freeing us from the prophylactic serv-

(*Continued on page* 543)

1917 . . . MEN AND SCIENCE ON THE MARCH

Ominous war clouds had brought the storm of world conflict into the life of America that year, but then as now, the nation needed the protective services of scientists, doctors, dentists — all who were competent to guard public health, to heal and fortify. Though dentistry had made great progress and was an acknowledged science, it was still young — but gaining momentum.

More was to be achieved in every branch of dentistry in the next twenty-five years than had been accomplished in any previous era. Prosthetic dentistry was to have its share in this new Era of Progress. To this progress Dr. Myerson contributed notably. Beginning in 1917, he introduced improvements in interchangeable facings and backings — pioneering later in the field of pontic teeth, and in the realm of non-anatomic teeth in 1930. In 1935 came the remarkable achievement of teeth with a transparent enamel — an achievement that in a few years completely revolutionized the art and science of denture restoration. Since Dr. Myerson publicly introduced True-Blend Teeth in 1935, the type of teeth then in use has been completely eliminated. Gone today are the once famous brands familiar to every dentist and laboratory throughout the world. Myerson teeth, or imitations of Myerson teeth, have completely replaced the chinaware teeth of a few years ago.

SCIENCE . . . AS WELL AS TIME MARCHES ON!

A QUARTER-CENTURY OF DEVELOPMENT –

NOW *in* 1942

– A TRIUMPHANT ANNIVERSARY OF ACCOMPLISHMENT

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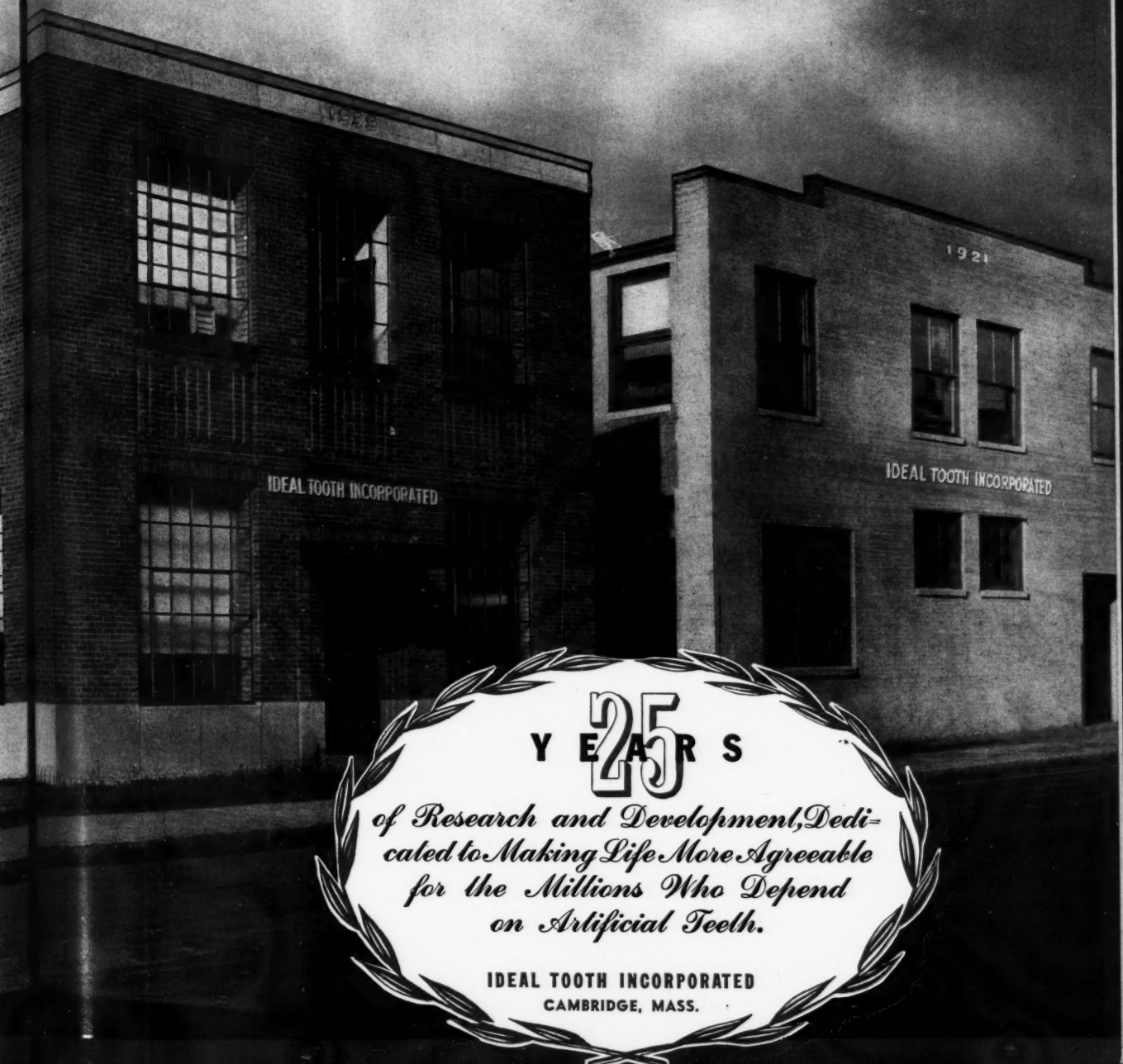
laboratories are made TRUE-BLEND and Characterized Anteriors, Light Absorbent Interchangeable Facings, and True-Kusp Posteriors. Today, in the face of a world again at war, observance of the mere passing of a quarter-century may mean but little — but the past twenty-five years are acknowledged by the profession as marking prosthetic dentistry's greatest upward progress — to which Dr. Myerson's outstanding developments have contributed.



25 YEARS

of Research and Development, Dedicated to Making Life More Agreeable for the Millions Who Depend on Artificial Teeth.

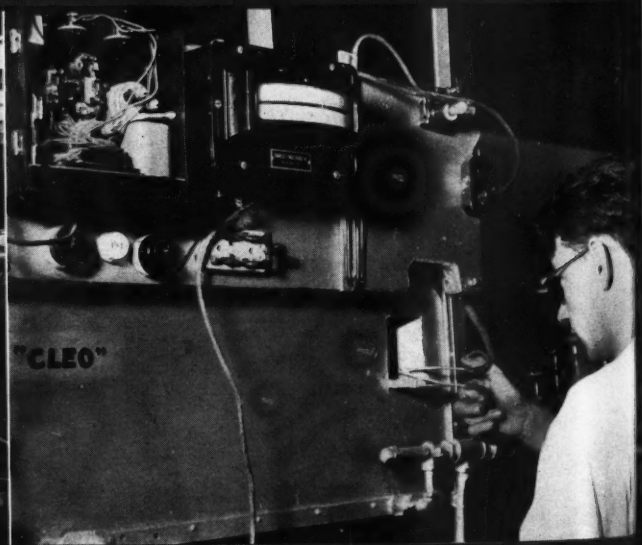
IDEAL TOOTH INCORPORATED
CAMBRIDGE, MASS.

SKILLED HANDS

. . . synchronize knowledge, modern methods, materials and laboratory equipment.

Expertly trained artisans, masters of their craft, ably directed, are ever working to create the "IDEAL" in artificial teeth. These coordinated elements of modern production help make and maintain a high place for Ideal Tooth Incorporated in the progressive fraternity of science. Little wonder that today the dental profession looks to the recognized leadership and guidance of Ideal Tooth Incorporated for still further developments in artificial teeth.

EVERY STEP IS METICULOUSLY CONTROLLED



(*Continued from page* 538)

ices and thus giving us more time for restorative dentistry.

A point that some of the opponents of legislation for hygienists seem to forget is that there is nothing compulsory that requires a dentist to employ a hygienist even in states where she is licensed. The dentist who prefers to practice without a hygienist and give his own prophylactic treatments is at liberty to do so.

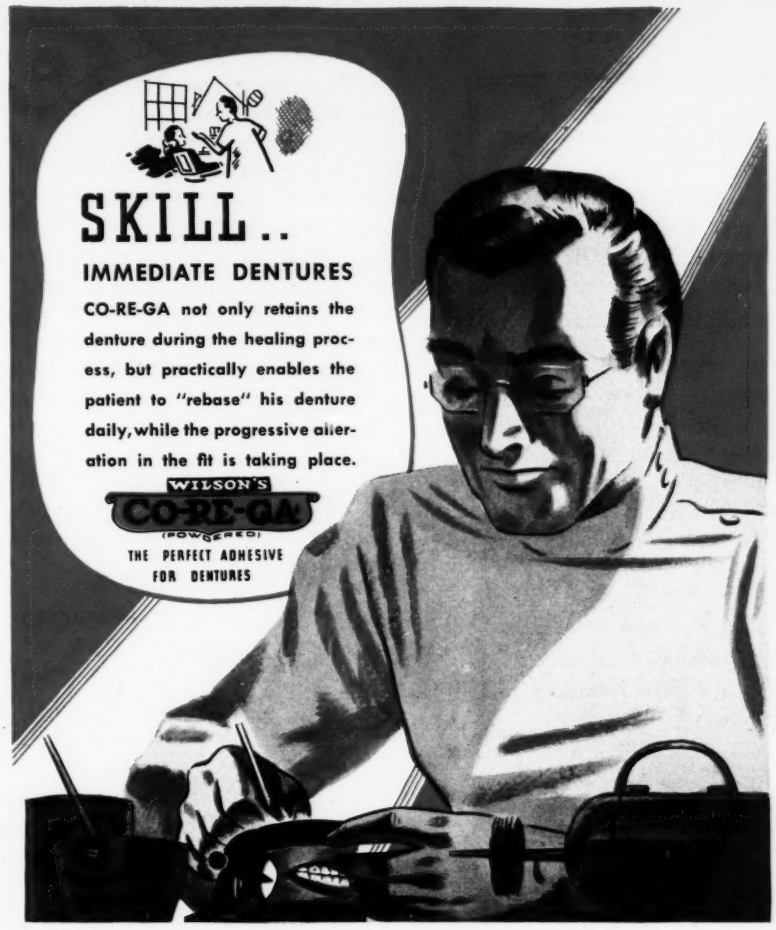
Tench, who spoke in the negative on the subject, is not enthusiastic about the hygienist in the dental office. He was charitable to point out, however, that her errors are more of omission and laxity than of commission. The same might be said of many dentists. Although Tench's own experience had taught him that he did not want the hygienist in his office, he did admit that the educational job she might do in the grade and high schools would be very much worth while. We know that dentists will not devote the time nor the energy to public education programs. They are too busy correcting the ravages of dental disease. A sustained, vigorous, year-in-and-year-out program of education, directed to every school child, is the only way we can expect to get people into the dental office voluntarily. Until the day that we know more about the causes of tooth decay, we need to marshall every force at our command to conquer this disease. Dentists should not look down their noses at any group of people who can be helpful to them. Hygienists are such a group. —E. J. R.

SHARE

Your Christmas Giving
With
The Salvation Army

WRITE

The Salvation Army
Into
Your Will


SKILL..
IMMEDIATE DENTURES
CO-RE-GA not only retains the denture during the healing process, but practically enables the patient to "rebase" his denture daily, while the progressive alteration in the fit is taking place.
WILSON'S
CO-RE-GA
(POWDERED)
THE PERFECT ADHESIVE FOR DENTURES

DOCTOR !
This Coupon is for your Exclusive Use

PLEASE SEND FREE SAMPLES FOR PATIENTS

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COREGA CHEMICAL COMPANY
208 ST. CLAIR AVE., N. W. CLEVELAND, OHIO

CO-RE-GA *is not advertised to the public*

LEE SMITH CERTIFIED IMPRESSION COMPOUND
INSURES BETTER IMPRESSIONS

Lee Smith Certified Compound is an all-purpose impression material highly efficient in general prosthetic work and a variety of other techniques. It requires less kneading to give you smoother texture for greater detail and its flaming and trimming qualities are unsurpassed. Your choice of convenient shaped cakes, ½ pound to the box . . . or tracing stick form, 15 sticks to the box.

Certified to surpass A. D. A. Spec. No. 3

LEE S. SMITH & SON MFG. COMPANY 7325 PENN AVENUE PITTSBURGH, PENNA.

DENTAL MEETING

Dates

Greater New York Dental Meeting, Hotel Pennsylvania, New York, December 7-11.

•

The Women's Dental Society of New York, mid-winter election meeting, Hotel Pennsylvania, New York City, December 16.

•

Dental Protective Association, annual meeting, Palmer House, Chicago, December 21.

•

American Association for the Advancement of Science (Dental Subsection), New York, December 28.

•

District of Columbia Dental Society, second and fourth Tuesdays in each month, from October to June at the United States Public Health Service Auditorium, Washington.

•

The Greater Philadelphia Annual meeting, Benjamin Franklin Hotel, Philadelphia, February 3-5.

•

Chicago Dental Society, Palmer House, February 22-25, 1943.

•

Pacific Coast Society of Orthodontists, San Francisco, Calif., February 22-24, 1943.

•

American Association of Orthodontists, Chicago, May 3-6, 1943.

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Virginia State Board of Dental Examiners, regular meeting, Medical College of Virginia, Richmond, March 30. For information write to Doctor John M. Hughes, Secretary, 715 Medical Arts Building, Richmond.

New Jersey State Board of Dental Examiners, regular meeting, April 5-10, 1943. For information write to Doctor W. E. Wilson, Secretary, 150 East State Street, Trenton.

•

Florida State Board of Dental Examiners, annual examination, Seminole Hotel, Jacksonville, March 15-18. For information write to Doctor H. B. Pattishall, Secretary-Treasurer, 351 St. James Building, Jacksonville.

Pulp Capping

(*Continued from page* 527)

Comment

From clinical experience one may say that a pulp capping operation is a hazardous procedure which should be attempted only when the operator perceives on the basis of the history of the tooth a chance of success, and when the patient understands and appreciates what is being attempted.

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GOLD AND THE PLATINUM METALS IN DENTIST

Evaluation of Sulfonamide Therapy in Dentistry

(An Abstract)

Kayne, C. B.: American Journal of Orthodontics and Oral Surgery, Oral Surgery Section, 28:474 (August) 1942.

THE ADVENT of the chemotherapeutic agents, the sulfonamides, has stimulated widespread interest in their use in the various pathologic and prophylactic problems confronting the dental profession.

Mode of Action—The present conception of their mode of action is that they inhibit the multiplication of susceptible organisms, an effect termed bacteriostasis, permitting the phagocytes to dispose of the organisms before they exert a lethal effect. It has been demonstrated microscopically that under the drugs may actually kill small numbers of microorganisms. This antibacterial effect is exerted by interfering with normal metabolism of the bacterial cell. The use of the drug together with the normal defense mechanism of the nost may not be sufficient to control infection, because the destruction of pathogens depends on the function of specific immunity.

Drug Behavior—There are variations in the absorption, distribution, conjugation, and excretion of the individual drugs: Sulfanilamide is readily absorbed and quickly diffused through the tissue by any route of administration. Sulfathiazole is readily absorbed in the tissues, although slightly less rapidly than is sulfanilamide. Sulfadiazine is moderately well absorbed by most patients when it is administered by the oral route, although its absorption is, as a rule, less rapid and complete than that of sulfanilamide or sulfathiazole and its rate of excretion is slower than either of the others and because of this adequate blood levels are more easily maintained.

Toxic Effects—Careful administration of the drugs is imperative because any one of several toxic effects may occur, such as: cyanosis, bone marrow depression, skin manifestations, nervous system manifestations, gastro-intestinal tract manifestations, depressed hepatic function, eye signs, oral manifestations, and drug fever.

Regarding the oral manifestations, the oral mucous membrane should be examined carefully and inquiry made as to whether or not the throat is sore. A patient receiving therapy for more than a week, who, while under treatment, develops a sore throat or complains of inflamed and painful mucous membranes, may be developing an agranulocytosis. Another manifestation is the appearance of an erythema of the buccal mucous membranes, which often accompanies the nodular eruptions occurring on the anterior aspects of the extremities during sulfathiazole therapy.

Administration in Dentistry—These chemotherapeutic agents are administered intra-orally or parenterally in the following dental infections: acute abscess, cellulitis of the face and neck, and osteomyelitis, as adjunctive therapy.

(*Continued on page* 548)

See page 499 D.D.11

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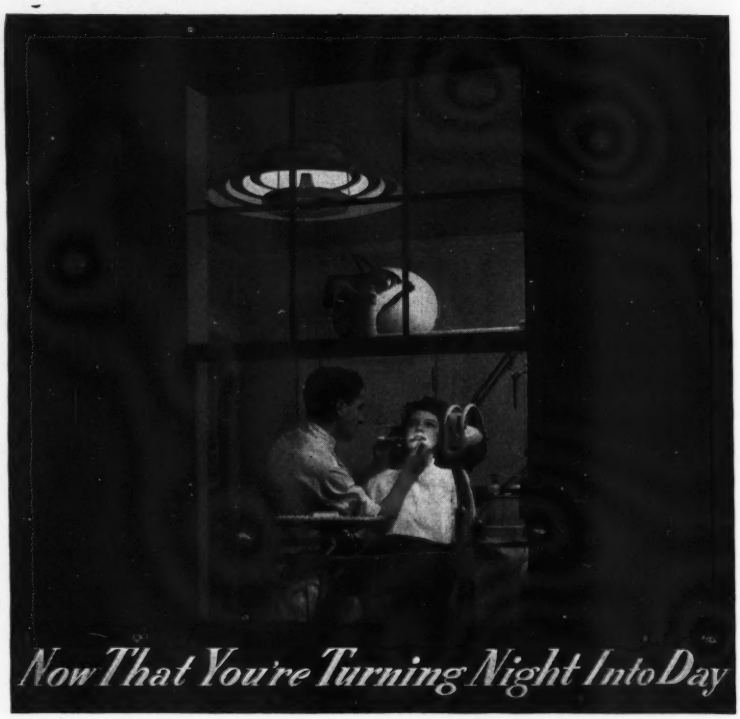

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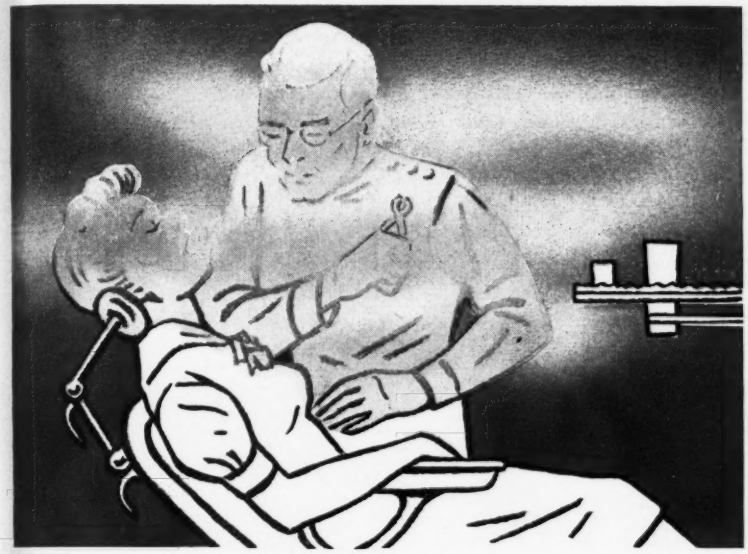

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(*Continued from page* 545)

Bacteriologic cultures should be made to obtain the correct etiologic diagnosis so as to know which of the sulfonamide drugs is the agent of choice.

The dosage must be adequately understood before administration is attempted.

Local Uses—The application locally of the sulfonamides is useful as a prophylactic measure in tooth sockets immediately after extraction; in compound fractures of the jaws; and in areas in which surgical procedures have been done, such as extirpation of cysts, apicoectomies, and alveolectomies.

In local applications the use of the powdered crystals of the sulfonamides is preferred because they are more readily absorbed. In tooth sockets from 3 to 5 grains of sulfanilamide are sufficient. Care must be exercised not to pack too tightly, as this may cause a shutting off of the circulation.

Conclusion—Because of the toxic effects of these drugs, cooperation with a physician is advisable if used internally.

Ammoniacal Silver Nitrate in the Treatment of Caries in Deciduous Teeth

L. ENTELIS, D.D.S., and I. FEINSTEIN, D.D.S.

[From South African D. J. 16:281 (August) 1942.]

AN INVESTIGATION was made to determine if the existing concepts concerning the use of ammoniacal silver nitrate in the treatment of caries in permanent teeth applied similarly to deciduous teeth.

The experiments were carried out on deciduous teeth of children ranging from 8 to 11½ years. Only those teeth were chosen whose roots were at least two-thirds resorbed and whose permanent successors were present and in their normal positions and would soon after extraction assume their normal places in the arch. The caries had to be previously untreated and must have penetrated into the dentine. Only vital teeth were considered. The cavity was excavated allowing only hard, leathery caries to remain.

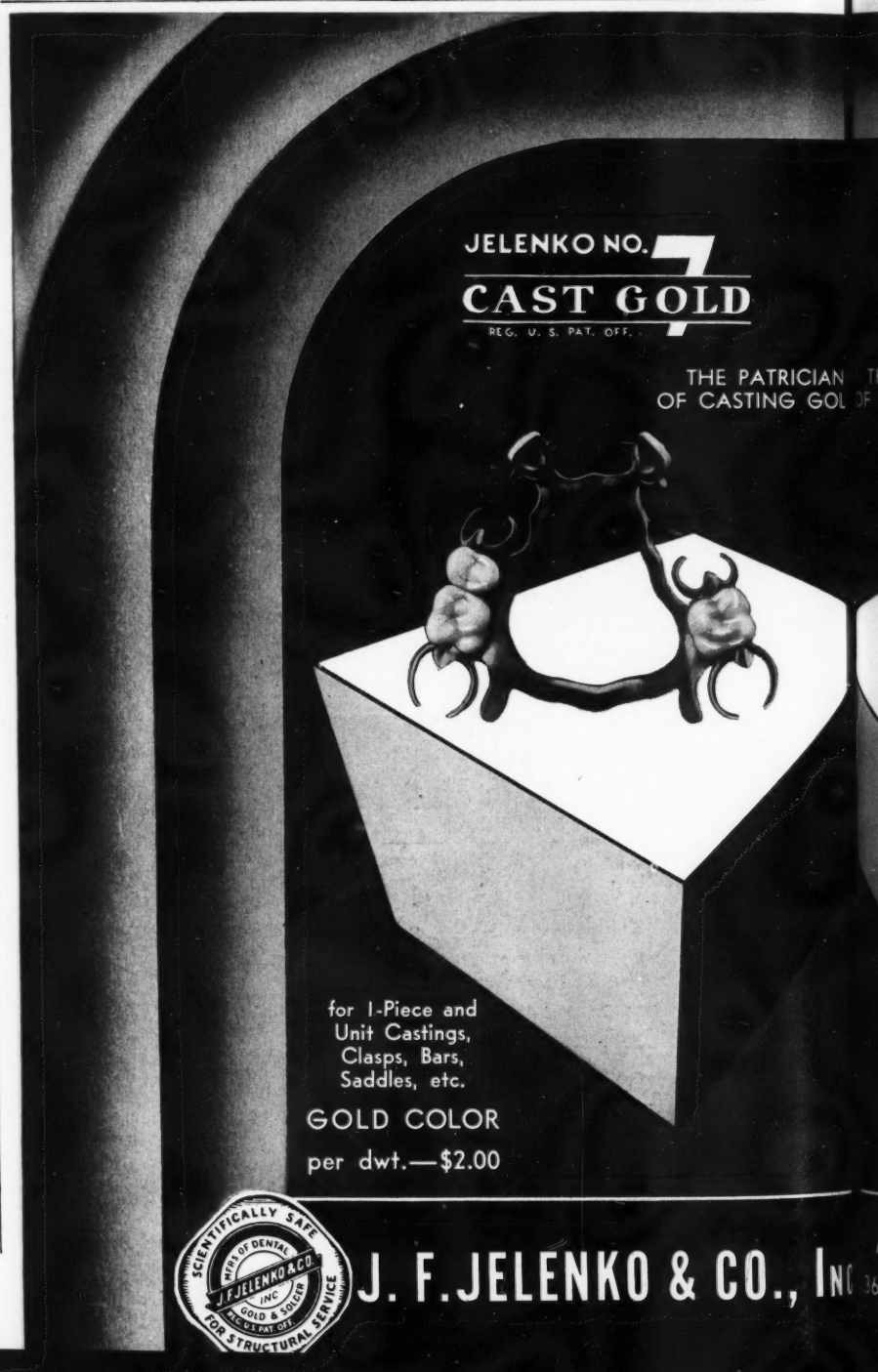
The objectives of the present investigation were fourfold:

1. To determine the depth of penetration of the ammoniacal silver nitrate solution into the carious area; specifically, to determine whether or not it penetrated to the base of the carious dentine.

2. To determine whether or not the silver nitrate solution penetrated into the normal dentine underlying the infected area.

3. To determine the sterilizing efficacy of the silver nitrate solution; that is, whether or not it halted the progress of the caries process after application.

4. To determine if the method of application of the silver nitrate solu-



tion was in any way related to the depth of penetration or to the extent of the deposition of the precipitated silver.

The ammoniacal silver nitrate solution employed in all phases of this investigation was prepared as follows: A concentrated solution of ammonia (28 per cent) is added slowly to a beaker containing silver nitrate crystals until the brown, murky precipitate which forms disappears and the solution becomes clear and devoid of any odor of free ammonia.

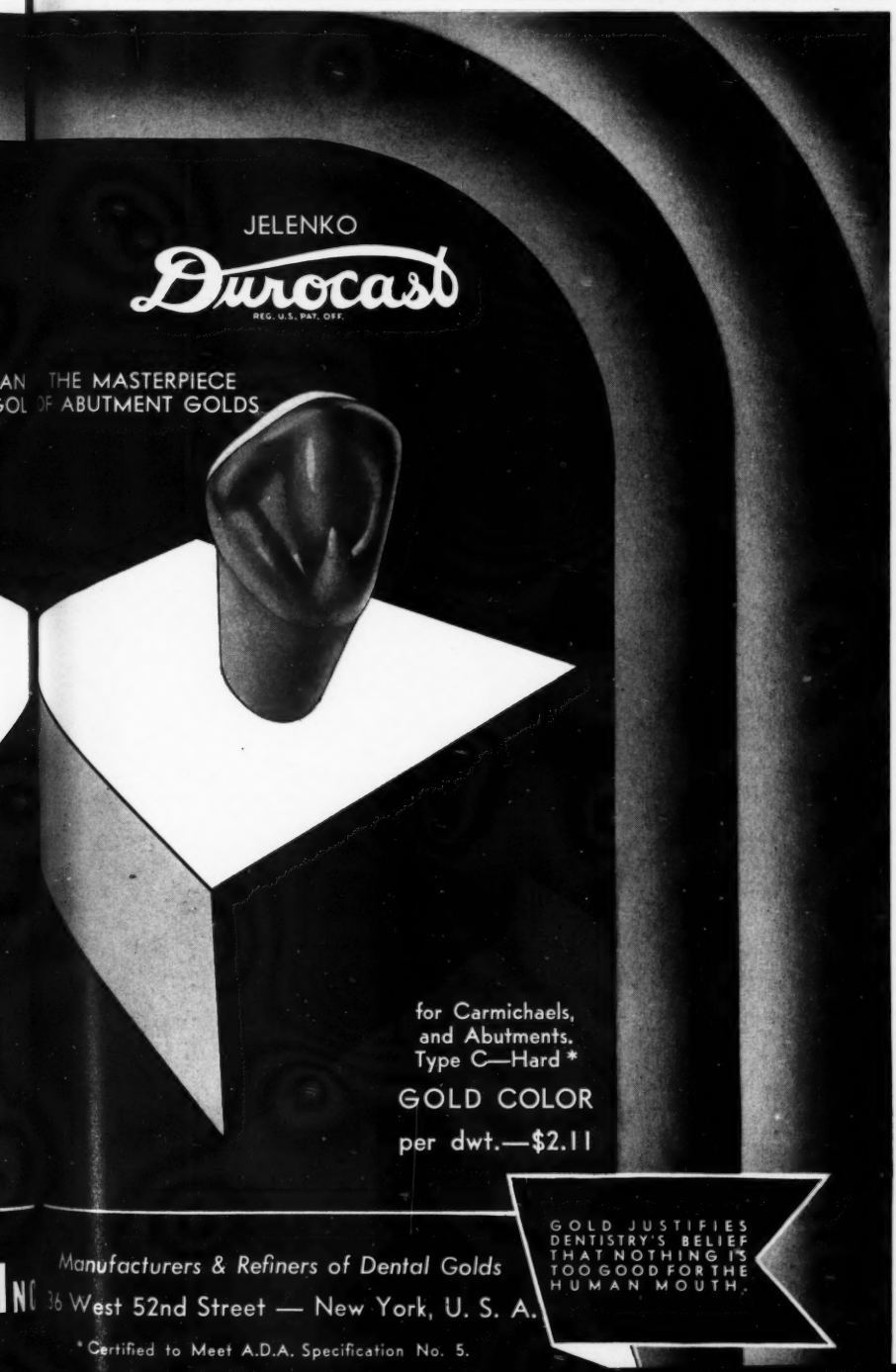
To learn whether there is any correlation between the length of time each solution is applied and the order in which the two solutions are applied and the depth of penetration, the solutions were applied for varying periods of time and in the two possible sequences of application. For example, some of the teeth were treated with the ammoniacal silver nitrate followed by the eugenol; to others eugenol was first applied, followed by the nitrate. The time for application was varied.

1. The tooth was isolated with cotton rolls and thoroughly dried.
2. A small cotton pellet was then saturated with ammoniacal silver nitrate solution, placed in the cavity, and pressed against the dentine.
3. Excess silver nitrate was then removed with a dry pellet.
4. Another cotton pellet was saturated with eugenol and applied to the cavity in the same manner.
5. Excess eugenol was likewise removed and the cavity then filled with zinc oxide and eugenol.

Depth of Penetration—The sections of the extracted teeth showed that the silver nitrate had penetrated to the base of the carious area, regardless of the depth of the cavity, and that there was a definite line of demarcation discernible between what appeared to be sound, uninfected dentine and the carious dentine that was stained pitch black by the dense silver deposit. Darkly stained tubules were found lying beneath the carious areas, but, significantly, similarly stained tubules were also found in other regions of the dentine where there had been no caries and no silver nitrate treatment. Under several of the cavities, deeply stained with metallic silver, no such darkened tubules were to be found, whereas in other parts of the dentine of the same teeth discolored tubules were present, most frequently under areas of abrasion.

Sterilizing Efficacy—No extension of the caries process was found beneath the deposition of silver in any one of the five cases that were permitted to remain in the mouth for varying lengths of time after treatment. This indicated that the reduced silver nitrate halted the progress of caries at least until these teeth were extracted, and lends support to the accepted belief that ammoniacal silver nitrate is an efficient sterilizing agent.

Relation of Application to Penetration—Sections disclosed that there was no correlation between the method of application and either the depth of penetration of the silver nitrate solution or the amount of deposition of the precipitated silver. In every case the deposition of silver was ostensibly complete and the penetration extended to the base of the caries.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